Issue 129 • 27th April 1991 • 88p

NEW COMPUTER EXPRESS

WIN A £500 LAPTOP PC
SEE PAGE 62

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

AMIGA GAMES FOR ONLY £2.99?

Turn to page 4 NOW !!

CANON'S ION

The camera that connects to your home computer

DOOR TO DOOR
***EXPRESS* INVESTIGATES**

RUN TO GROUND

Last week, *Express* revealed that Dr Susan Watson and a man calling himself John Gold were behind the Geographic *Door to Door* debacle. Readers will recall that Dr Watson told us that John Gold had gone and that she had no way of getting in touch with him.

Express stayed on the trail of the elusive Mr Gold - and it now appears that he has again visited Dr Watson at her Cranfield Place home. And it also looks like this is not the first time that software buyers have been hit by a scam involving badly functioning route finding software.

More details – page 8

DISCOVERED

The fastest, smallest and most powerful machine ever seen

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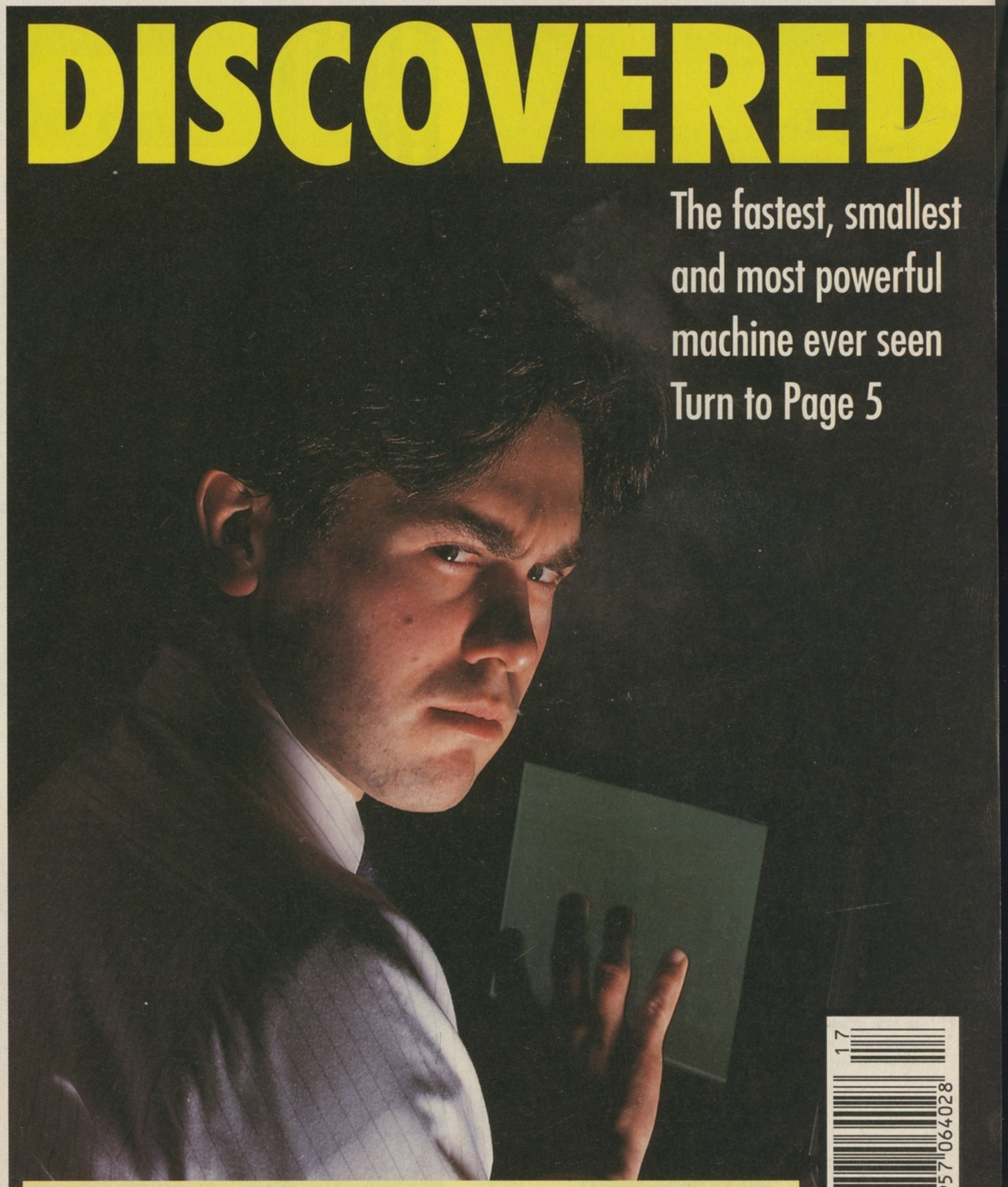

PLUS: GARY PENN'S GAMES WEEK

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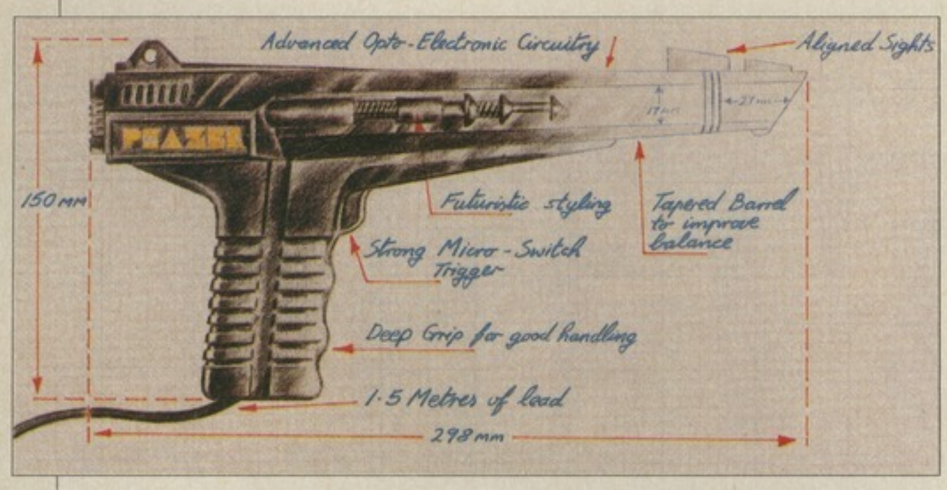
frontend

edited by Colin Campbell



GET FIRED UP

ST and Amiga owners are to be offered a sharp-shooting light gun with dedicated software next month, thanks to veteran peripherals manufacturer Trojan.

The Amiga and ST Phazer pack will feature a sleek gun along with two games – mad shoot-'em-up *Orbital Destroyer*, and a more difficult clay-pigeon gunning affair, *Skeet-Shoot*.

Both packs retail at a very reasonable £39.99, and a PC version is being planned. Trojan was responsible for manufacturing Amstrad's Action Gun for the Speccy, but has now decided to go it alone on the 16-bit machines.

The Llanelli based company has recruited a team of programmers to write special games, and is also talking to major games publishers with a view to making top games Trojan compatible.

Also, look out for forthcoming lightpens for the ST and Amiga. Apparently these will run on most software with standard mouse drivers. Trojan has run satisfactory tests on such notables as *DPaint III, Photon Paint, Music X, Battlechess , Protext* and *ProPage* .

The pens will cost £39 when they arrive later in the summer, and a simple art package is likely to be bundled. Call 0554 777993. ■

Lap of luxury

Japanese mega-manufacturer NEC has launched its first notebook PC into the UK, with the announcement of the Ultralite 286F.

Measuring 8.5" x 11.5" x 2.0", the Ultralite is slightly smaller than the standard A4 size, and weighs just over six pounds. It runs at 12MHz and comes with a 20Mb hard disk, and IMb of RAM on board expandable to 5Mb.

The black and white backlit LCD screen boasts a resolution of 640 x 400 CGA double scan. There are slots for a modem and dedicated high-speed memory, ports for serial and parallel connections and a connector for an external floppy drive. An internal 3.5-inch drive comes as standard.

There's up to three hours of continuous use under battery power, which can be recharged within three and a half hours from the mains. Buyers will be laying out £1,795; price includes all the usuals such as the case, MS-DOS, AC adaptor and battery. NEC UK is on 081 993 8111. ■

Acorn makes sky high deal

Tomorrow's RAF heroes are to be trained on Archimedes computers, following a £230,000 deal between manufacturer Acorn and the Aircrew Selection Centre at RAF Biggin Hill

The famous training centre has bought 48 Archie workstations which will run Ministry of Defence Software to test the eye, hand and foot co-ordination and mental agility of would-be pilots. This is achieved by measuring responses from attached rudder pedals and joysticks.

All the machines will be linked via an Acorn Econet network with UNIX connectivity, allowing RAF and MOD staff to carry out complex data analysis of the results. ■

Computers are par for the course

Every time someone of Ian Woosnam's ilk is handed a cheque for £3 million after holing 36 balls, thousands more people start getting into the swing of the world's fastest growing sport. The result is that golf courses start to resemble football terraces.

Enter the computer.

Golf simulators are springing up in high-rise buildings around the world, offering city slickers the chance to get a round in without leaving the comfort of their own smog.

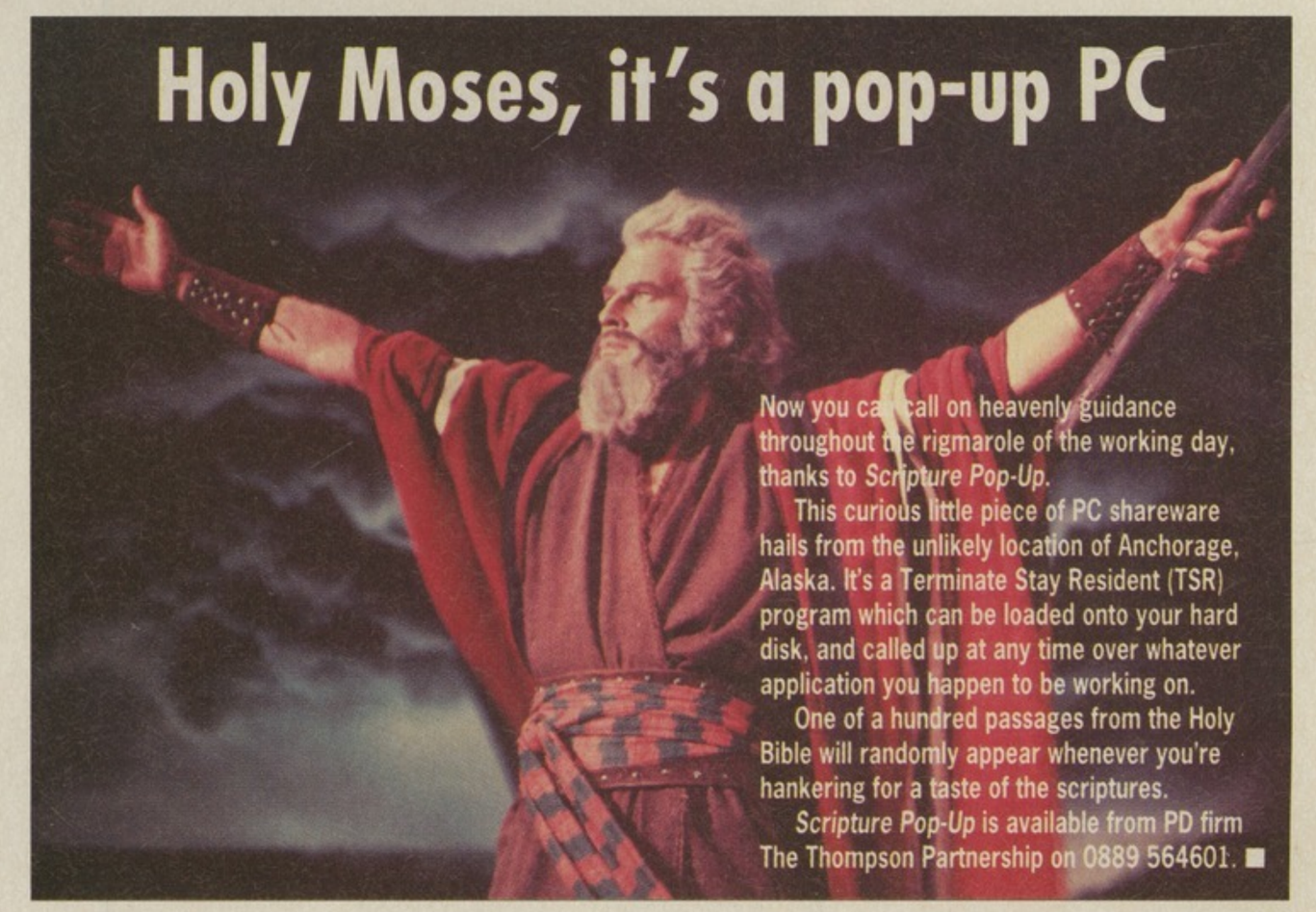
Golfers use normal clubs and balls, but fire their shots into a huge screen displaying a normal view. While the ball bounces off the screen, the computer works out where on the course it would land, before making an update.

Tim Jegle, a broker and regular member of the New York Twin Towers course said: "You have to wait hours to play the Long Island courses. But I have a two-hour break between the American market closing and Singapore opening. It's good to have fun and relieve the stress".

As always though, computers are being blamed for taking the greatest pleasures out of life. Insurance agent Steve Ashford tried out the system, and concluded: "This helps to keep your stroke going through the year, but it is hardly conducive to keeping trim. Half the fun of golf is the walk and the fresh air." ■

***• Comic book favourite Spiderman has leapt straight to the top of the Nintendo Gameboy charts. The amazing webbed one is being pursued by ultra-violent classic* Double Dragon *and action-packed adventure* Gargoyle's Quest..**

Holy Moses, it's a pop-up PC



Now you can call on heavenly guidance throughout the rigmarole of the working day, thanks to *Scripture Pop-Up*.

This curious little piece of PC shareware hails from the unlikely location of Anchorage, Alaska. It's a Terminate Stay Resident (TSR) program which can be loaded onto your hard disk, and called up at any time over whatever application you happen to be working on.

One of a hundred passages from the Holy Bible will randomly appear whenever you're hankering for a taste of the scriptures.

Scripture Pop-Up is available from PD firm The Thompson Partnership on 0889 564601. ■

IMAGES ON THE MOVE

Fans of computer graphic art will be making a bee-line for the Video Positive festival taking place in Liverpool this week. Britain's largest video art jamboree has been all but dominated by computers this year, with the Amiga figuring prominently.

Biggest attractions for image freaks are likely to be Julie Myers' creation *What She Wants* (pictured right), a "sideways look at consumerism from a female perspective".

Myers, the first ever computer graphics animator in residence at the Museum of the Moving Image, used an Amiga 2000 running *DPaint III* to come up with a chaotic clash of familiar supermarket products and general weirdness.

Football enthusiast Clive Gillman managed to bang out *Losing*, an arty look at soccer culture, on his Amiga 500 which is well worth checking out.

Video Positive '91 runs until Monday 29, so take a wander around Liverpool's Tate, Walker, Open Eye and Bluecoat galleries for free.

Call 051 709 26653.■

Fraudster guilty of piracy deception

A "dishonest fraudster" has been fined £7,500 with a nine month suspended sentence for selling illegally copied software.

Computer dealer Ronald Ridgeway was sentenced two weeks ago by Bournemouth Crown Court. His Honour Judge Rudd described Ridgeway, who was found guilty for a total of ten offences, as a "dishonest fraudster".

The Federation Against Software Theft (FAST) was alerted to Ridgeway's activities after receiving reports from customers of Infotec Data Systems in Bournemouth who had bought full price copies of *Wordstar* and *Delta Plus* but had not been supplied with originals disks or manuals. Working with Dorset Trading Standards Department and the Dorset Constabulary Fraud Squad, a lengthy investigation led to charges under the Copyrights Act, Trade desriptions Act and Criminal Attempts Act.

FAST's chief executive Bob Hay commented: "Innocent end-users were being systematically deceived by an unscrupulous dealer. Over recent months our telephone hotline has been used extensively to help would-be purchasers become aware of what they should expect from legitimate packages. Only when they know what to expect will they be able to identify illegal resellers." ■

• Bob Hay: guiding would-be purchasers.

What's greener than a turtle, hates pizza, and wouldn't be seen dead in a sewer?

It's *Captain Planet* and the planeteers, the "next big thing" from the superhero manufacturers in America. *Captain Planet* and his pals are all about saving our polluted earth, they're strictly multi-national and 100 per cent ozone friendly. Within one year you'll be sick of the sight of his cartoons, T-shirts, mugs *et al*, but before that Mindscape will have launched his top-selling computer game. Check it out later this year. ■

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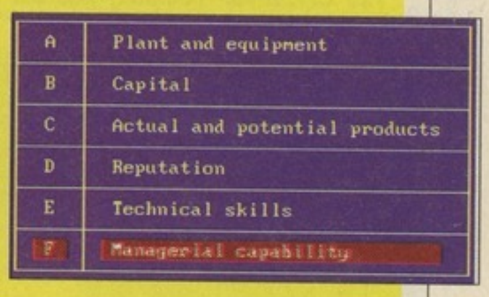
Kyocera's F-800T laser printer has an amazing number of fonts for a bargain price – page 53

Bored with the average business seminar?
Seven education software packages teach you on your PC – page 56



EVERY WEEK

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Games Week
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Win a £500 Epson Equity Laptop – page 62

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Samsungs speedy machine

Samsung has launched an 80 column 9-pin dot matrix printer with a retail tag of £189.

The SP0903N can manage 300 characters per second in high speed draft, 250cps draft and 50cps in Near Letter Quality. It boasts a graphics resolution of 240 x 216 dots per inch and supports IBM Proprinter and Epson FX-85 emulation. Korean giant Samsung is describing it as "a cost effective workhorse".

In a extended bout of product launches the firm has also unveiled a new 14-inch colour VGA monitor (CJ4685) costing £256. There's also a 17-inch mult-scanning monitor (CSA7571) which will set you back £899, and the obligatory 386SX notebook PC. The NM386S/16 Notemaster weighs in at £2,200.

Samsung is on 081-391 0168. ■

• Samsung 9-pin: printer "cost-effective".

HiSoft leads support in popular TT race

ST software publisher HiSoft last week announced its intention to support the Atari TT with its popular Lattice C5 and Devpac programs.

According to HiSoft the TT version of the *Lattice C* compiler contains changes appropriate for the more powerful machine. There are full 68030 libraries, 680x0 family versions and a high performance floating point code of one million Whetstones per second. There's also a complete UNIX-make utility. Price is £129.

DevPac TT (£249) includes a pop-up menu system, a TT compatible debugger and support for Lattice format linkable code and Motorola S records. Call 0525 718181.

● For a concise look at C++ and Object Orientated programming see page 41. ■

Apple's in the red...

Soviet computer buyers starved of decent hardware are soon to be sampling the delights of the Macintosh – Apple is on its way East.

The Californian company has set up Apple Central Europe Corporation in Warsaw which will market its products to the Soviet Union, Poland and Hungary. Technicians are currently working on localised versions of Macintosh systems software with a brief to be ready by the middle of summer.

Representatives from the company are meeting in Paris to decide how best to tackle the difficult Eastern European markets. Apple's top-brass are planning a fact finding trip to Moscow next month.

... And so is Big Blue

IBM, the world's largest computer company, has recorded a loss for the first time in its history.

Big Blue lost $1.7 billion in its last financial quarter as hardware sales plunged by 17 per cent. IBM's sales performance was down 4.5 per cent to $13.6 billion. The company can take some solace in the fact that it made basic profits of $532 million but that does not include a new $2.3 billion charge which requires that funds be held back for the company's post retirement health funds.

Chairman John Akers said: "The worldwide economic slowdown has created an uncertain and difficult business environment. However, we believe the long term need for our products has not been diminished." ■

Cheap 16-bit titles ready for Amiga, Atari ST and PC

BARGAIN PRICE SET FOR GAMES

If the price of 16-bit games is taxing your pocket, then look out for a new range of budget games, priced at an incredible £2.99.

The 16-bit Pocket Power Collection from Prism Leisure offers ST, Amiga and PC owners old games at very new prices. Previously, budget prices for 16-bit games was set at more than £5. But Prism reckons buyers want real bargains when it comes to low-cost gaming.

First up will be 16 titles for the Amiga, 13 for the Atari ST and three for the PC (though more are planned in the near future). Golden oldies such as *Football Manager, Thai Boxing, Hotshot, Seconds Out* and *Mouse Trap* will be sold through normal software dealers as well as garages and newsagents around the country.

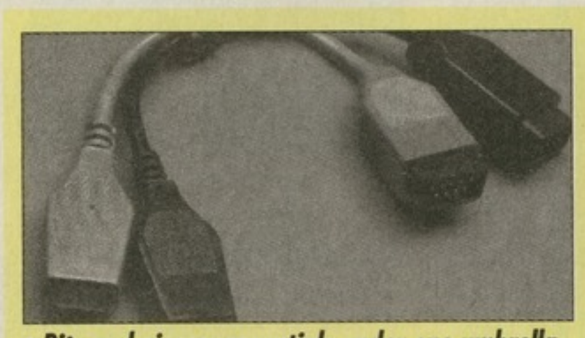
Prism managing director Geoff Young told *Express*: "We've put a lot of thought into this range because we want it to appeal to everyone. We've even designed a special compact case for the games so they fit into disk storage spaces."

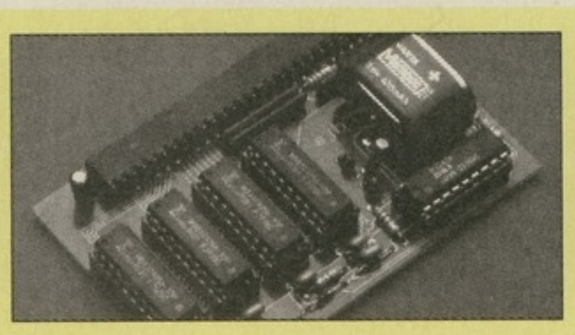
Prism has been scouring the industry for games which software houses no longer bother marketing, and they've managed to secure sensible deals so buyers don't have to dig deep.

Young wants to repeat the success of Mastertronic which took the games market by storm in the mid '80s with its £2 to £3 range of budget games for the Spectrum, C64 and Amstrad CPC. He's also talking to more software publishers in an effort to continuously bring new games to the range.

The 16-bit Pocket Power Collection will be in the shops within two weeks. ■

• The Pocket Power Collection – for sale all around the country.





• Bits and pieces: essentials under one umbrella.

Electra extras for your micro

Trawling around your locality for an elusive lead or rare add-on board can be one of home computing's most tiresome chores. But now there's a new way of stocking up on those extras.

Birmingham based Centresoft has launched a complete line up of leads, boards and wires under a special brand called Electra. Upgrades, switches, leads, joysticks and disks will all be included at what Centresoft claims are competitive prices.

For example, an Amiga half Meg upgrade will cost £40, a PC joystick adaptor retails at £25 and an ST extension lead will set you back a fiver. There are also modem leads, printer cables, four player adaptors and mouse switches for everything from the Beeb to the Speccy.

Centresoft's position as a top distributor in the computer industry will enable it to position Electra products around the country. Managing director Richard Steele commented: "People want to get more out of their computer rather than just using it as a games machine. Upgrades, soundcards and all the rest of it help them to do just that." ■

World beating machine leaves competition in the shade

MIGHTY NOTEBOOK DUE FROM UK FIRM

A notebook computer offering performance ratings which far outstrip even the best of rivals is to be launched this Summer, *Express* can reveal.

Cambridge based Tadpole Technology has developed a tiny machine which offers speeds of 18 Million Instructions Per Second (MIPS), but which weighs just 5.5 pounds. The notebook is based on a sophisticated 25MHz Sun Sparc processor and can run UNIX as well as DOS software. Amazingly, it costs only £3,500; a quarter of the equivalent desktop price.

Tadpole's SparcBook has been under development for the past two years, but the British company has managed to keep its plans a secret. Last week chairman Bob Gilkes told *Express*: "We didn't want to make a big announcement and leave people wondering what it's all about. We want to educate the market slowly. This is a very special machine."

He added: "Because of the way the market has developed many people see notebooks as mere executive toys for such functions as word processing. But this is something different. It's a powerful workstation in notebook form."

He predicted that sales of the SparcBook would exceed 50,000 in its first year with launches planned in the US and Japan. Tadpole is banking on would-be purchasers being bowled over by the machine's impressive technical specifications, and reasonable price.

The 18 MIPS Sparc RISC processor is faster than Acorn's ARM 3 and Intel's monster 486 chips. Included in the notebook are 32 Mb RAM on-board with a 120Mb hard disk, standard floppy drive, a modem and Ethernet connectivity.

SparcBook is just under A4 size measuring 8.5" x 11.75 x 1.9", and features a backlit VGA screen with 16 grey levels.

A rechargeable battery can manage 2.5 hours of use. It has been designed primarily to run UNIX Version 4, but also boasts full IBM compatibility.

Tadpole has been operating in the computer industry for seven years designing top-end single board computers for major manufacturers such as IBM and AT&T. Through such contacts the firm has enjoyed success in the lucrative US market.

"This has given a small company a chance to grow into a manufacturer with international presence," said Gilkes, "We employ 100 people and have developed a state-of-the-art manufacturing capability. Because we've always been at the sharp end of technology we can see what is coming before other people. That's why we decided to go ahead with the notebook."

The SparcBook will be rolling off the production line in July, but large volumes are not expected to be available until October. ■

WHAT MAKES SPARCBOOK THE BEST

- **25MHz Sun Sparc processor running at 18MIPS**
- **32Mb RAM on board**
- **120Mb hard disk as standard**
- **Ethernet interface included**
- **Modem with all models**
- **Runs UNIX and MS DOS**
- **Weighs just 5.5 pounds**
- **Will retail at £3,500**

WHO WILL BUY?

- **Professional CAD users who have made models on workstations will be able to show their plans to clients in the field.**
- **Architects, surveyers, scientists and engineers who need power and storage for difficult diagnostic work.**
- **Businessmen in financial institutions who want to crunch numbers quickly, and need to see the results on the move.**

Master of PC sound

Soon PC users will be able to control games by shouting the commands at them, thanks to the latest upgrade of *Soundmaster*.

Soundmaster II for the PC is a multi-media soundboard package which includes full featured voice recognition among other music and MIDI related features. It will allow you to give simple commands to your computer using a microphone as supplied.

You can set up a series of voice commands which substitute keystroke commands. So, you can use it with a word processor to bring up a file or style text with a couple of words into the microphone. Or you could set up a game so that you can shout out when to fire.

• ***Soundmaster II: at your command.***

The new *Soundmaster* bundle is also MIDI compatible and is supplied with *PC-Lyrca* – a music composition program – a high quality digital graphics based editor direct to disk recording facilities and playback software.

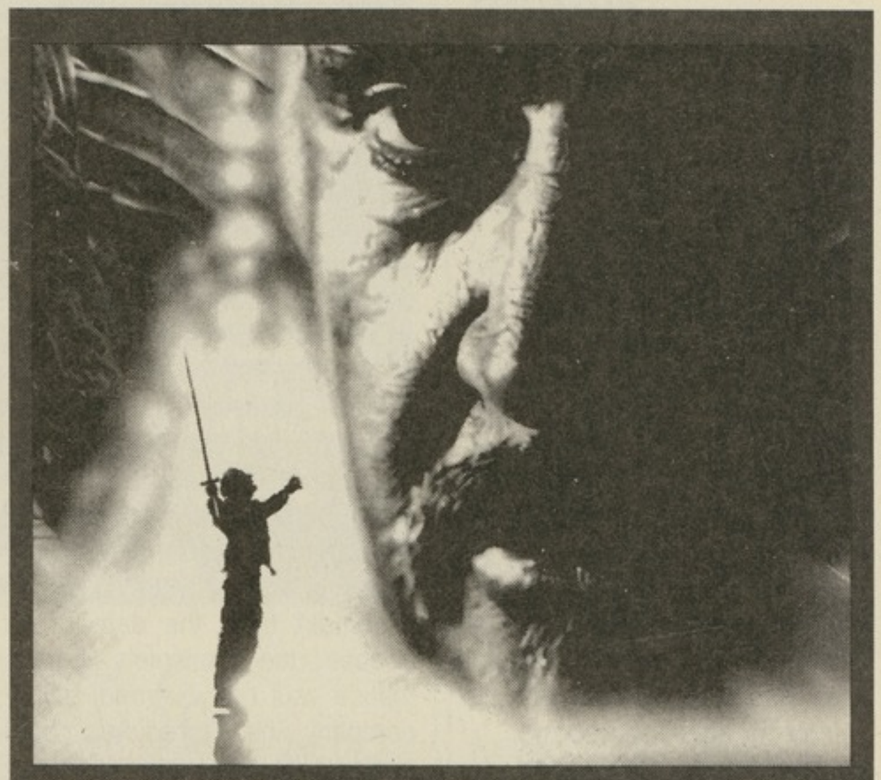
Soundmaster II will retail for £179.95 and will be distributed by Optima International. ■

Virtual meeting

The first British conference and exhibition dedicated to the controversial area of Virtual Reality will take place on 5-6 June at The Conference Forum in London.

Key technical, human and commercial issues will be discussed as well as a look at present VR applications. First day visitors will be treated to an explanation of the basic concepts of Virtual Reality; what it is, what it can do and the potential of emerging systems. The second day will be altogether more serious with detailed talks on telerobotics, computer aided design and scientific applications.

Conference chairman Tony Feldman explained: "This is not a research orientated conference. The objectives are to demystify Virtual Reality." The full conference will cost £395. Call 071-931 8908. ■



• ***The first Highlander film was good but the game was not. Will Ocean manage to reverse this situation second time around?***

There can only be two?

Ocean looks set to have a second crack at producing a decent game based on *Highlander*.

The company is reportedly bidding for the rights for *Highlander II: The Quickening*. Ocean had a less than successful time producing a computer game based on the original sword-'n-sci-fi movie a few years back but has since produced some acclaimed games based on film licences, including *Batman* and *Robocop*. However, the reviews for the film are not a good omen; it has been universally panned by the critics. ■

Researchers produce pollution simulation

British researchers last week unveiled an 'environmentally friendly' program to help tackle pollution.

The software package, known as ECoS, Estuarine Contaminant Simulator, has been developed by scientists at the Natural Environment Research Council's laboratory in Plymouth. With this software scientists can simulate the behaviour of any contaminant in any estuary. By feeding in details of the estuary and the contaminant it is possible to estimate the extent of damage upon the environment. The computer indicates where the worst pollution is likely to be.

ECoS is simply an extension of work undertaken by the lab on behalf of the British Government to estimate the impact of the anti-fouling paint TBT, Tributyl Tin, the most toxic substance released into the sea in the last 20 years.

ECoS could prove to be an invaluable aid to emergency services dealing with the after effects of a chemical or oil spillage such as the disastrous Mediterranean tanker accident three weeks ago. ■

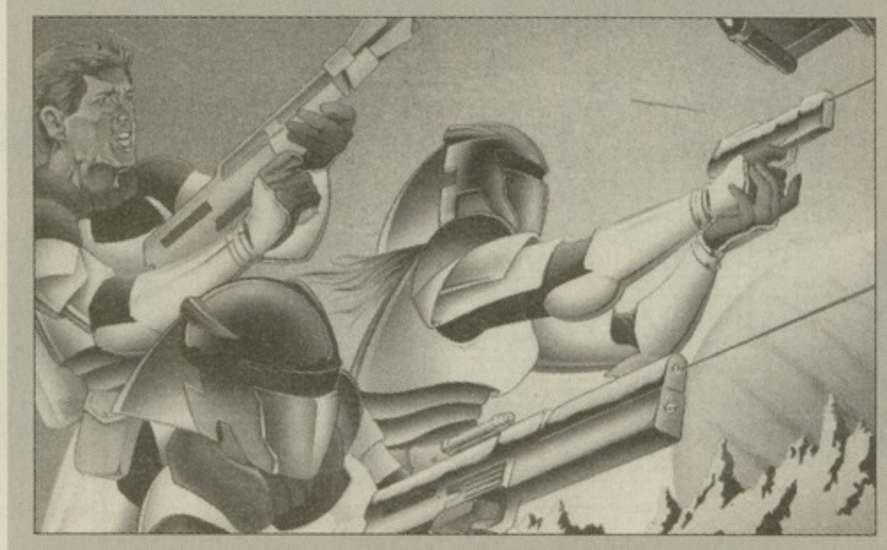
Computer beats red hot credit

The dream of up to 1.5 million debt-ridden Britons nearly came true this week when computers storing thousands of bills at Mercantile Credit went up in flames.

Names and addresses of thousands of customers were burnt as fire swept the headquarters of the company in Basingstoke, Hampshire. Customers records of payment on items such as company cars and televisions were destroyed.

However, dreams of a debt free life were smashed since Mercantile Credit has a backup system storing all customer files on another computer in Colindale, north London. Just in case that burns down too, more computers hold copies in a Gloucester branch of Barclays Bank. ■

Role play classic finally on-screen



• If successful The Zhodani Conspiracy could be just the start of a long running series.

Fans of the legendary role playing game *Traveller* will be able to concentrate on the game without all that tiresome dice-throwing and route-mapping with the release of *Mega Traveller 1: The Zhodani Conspiracy.*

Traveller was one of the first, and most popular, role playing games, and surprisingly this is the first time there has been a serious attempt to transfer it to computer.

The Zhodani Conspiracy, from Empire, is set in the same universe, the 3rd Imperium, as the original game and follows a similar plot, with the Zhodani causing insurrection in preparation for an invasion. There are 27 planets to explore.

The only real difference is that computer has taken all the tedious mechanics out of the game, leaving the player free to get on with on the game play, which is touted as being extremely complex and demanding.

Mega Traveller 1: The Zhodani Conspiracy is the first of a proposed series which Empire is predicting will run and run. It is available for the Amiga and ST retailing at £30.64 and IBM and compatibles will be priced at a higher £35.75. ■

Commodore struggles to boost console's market share

C64 CONSOLE PRICE SLASH?

Commodore looks set to drastically cut the price of the C64GS games console following disappointing sales.

Though the company has not confirmed the move, sources at the company have revealed that the price of the console looks likely to be cut by £40 sometime next month. This will take the recommended retail price down to just £59.99.

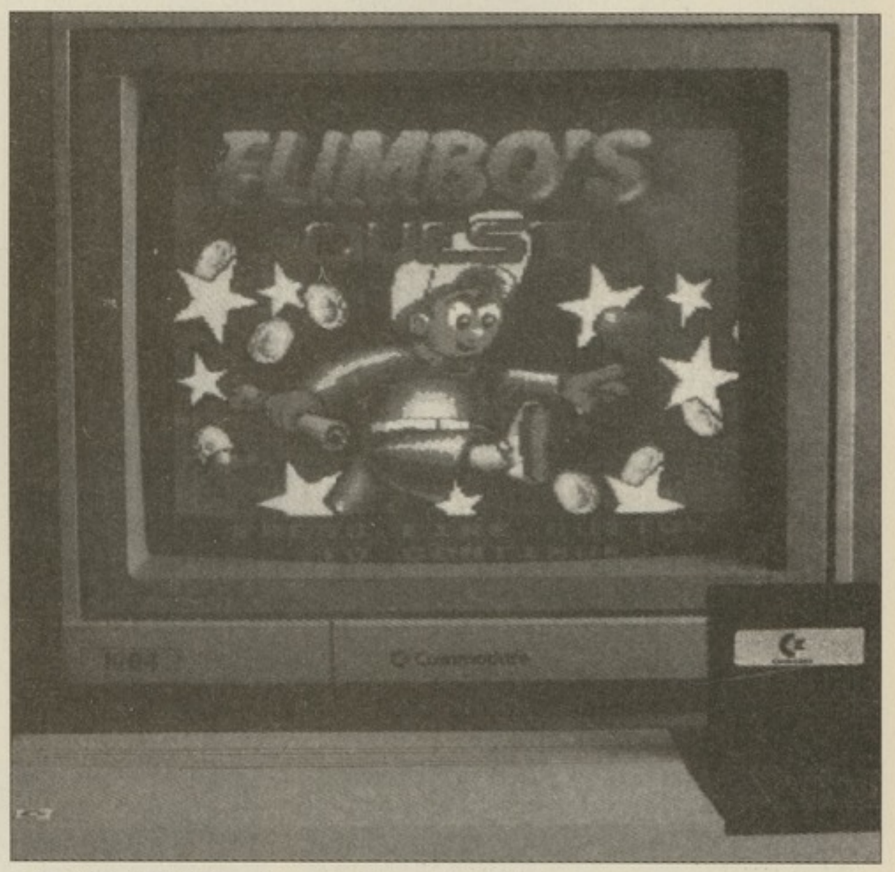
The machine was originally launched last September, but has only sold around 25,000 units. In comparison the UK user base for console market leader, Sega, is 420,000.

Almost from the date of its release the console's performance was not as good as the company had predicted, and chain stores had started giving discounts on the machine even before Christmas.

The official price cut is being seen as a last ditch attempt by Commodore to boost the machine's market share, though it is also believed that the company is eager to redefine the function of the machine in the market. It is expected that the emphasis will be shifted away from competition with Sega and Nintendo, and that the console will instead be used as low cost introduction to Commodore's range of 'real' computers.

The next machine up the rung is the C64 which retails for £124.99 and the larger price difference will emphasise the advantages of the home computer over the console.

Commodore is denying that the future of the C64GS is in doubt. A spokesman said: "There is no price cut for the C64GS planned at the moment." ■



• The C64GS': £40 price reduction set for May.

Power graphics

Laser is launching a 486 33MHz Towermodel PC aimed at professional users of Computer Aided Design (CAD) and other processor intensive applications.

The Laser 486 comes supplied with a 32-bit 8086 processor running at 33MHz, 128Kb of cache memory, 2Mb of RAM and a 110Mb hard disk. Software bundled with the system includes MS DOS *4.01*, PC *Tools Deluxe* and MS *Windows 3.0*.

Aside from CAD and other graphics applications, Laser also reckons that the machine is ideal as a fast and efficient file-server for an office network.

The Laser 486 retails for £4,395. Laser can be contacted on 0372 467778. ■

Mouse that lasts a lifetime

The Little Mouse should last PC users a lifetime without ever needing to be cleaned or repaired, according to its manufacturer Mouse Systems.

The new mouse uses the latest M-5 optical technology developed by the company, resulting in the absence of any mechanical moving parts which could go wrong or get clogged up. The company claims that the optical system also makes the mouse up to 100 times more accurate than mechanical alternatives, and will not skip, stutter or stumble during use.

Designed for use with IBM and compatible machines using MS DOS 3.1 or higher, the Little Mouse is smaller and lighter than standard IBM mice. It has two buttons which can be customised for left or right handed users. It retails at £74.95 and so confident is the company of its stamina, it comes with a lifetime guarantee.

• Small and sleek, the Little Mouse uses the latest in optical technology.

Brit book on CD-ROM

The first British encyclopeadia on CD-ROM will appear next month, thanks to Attica Cybernetics.

Hutchinson's Electronic Encyclopeadia stores 25,000 entries, 7,000 biographies and 250 tables with time charts, all of which can be rapidly accessed. It's out now for £99, and you can see the system at the CD-ROM Europe Show at the Hammersmith Novotel from 21-23 May. Attica can be contacted on 0865 791346. ■

NEXT WEEK: Don't miss our definitive review of all the best new products from the Which Computer? Show

Special bundle to boost CD-ROM format

CHEAP 386SX CD-ROM DEAL

A 386SX computer system with CD-ROM drive and an 85Mb hard disk is set to go on sale at under £1,500.

The system will come from Exsel Computers International which has grabbed the distribution rights to a low cost CD-ROM drive manufactured by Singapore-based ASC Computers. The drive will retail for £495, but Exsel has bundled it with a powerful 386SX computer in a package that will cost just £1,475. The system will also come with a Super VGA card and monitor.

Exsel is predicting that the offer will encourage more companies and individuals to invest in CD-ROM technology. David Northey, managing director of Exsel, told *Express*: "We believe that this offer is sufficiently low-cost to appeal to more people. It will encourage even greater interest which is, of course, better for CD-ROM in general."

The bundled CD-ROM drive, the INT-01 CDD, is an internally installed device and will accept industry standard 5.25-inch Compact Discs. It will be able to handle a disc capacity of 540Mb and has an average access time of 500 milliseconds. It is also available separately, as is an external version, the EXT-01, for £495.

The computer, also from ASC, is a Compro 386-201 running at 16/20MHz with a 1.2Mb floppy drive. It comes supplied with an extra 1.44Mb floppy drive and an 85Mb hard drive. MS DOS 4.01 will be included as standard, while DR DOS 5.0 is available as an option at the same price.

Exsel is confident that the format will take off in a big way. "More publishers are taking an interest in CD-ROM as a format as the public realises its advantages," says Northey.

The company is also eager to push into the education market which it feels will benefit from the mass storage capabilities of CD ROM. ■

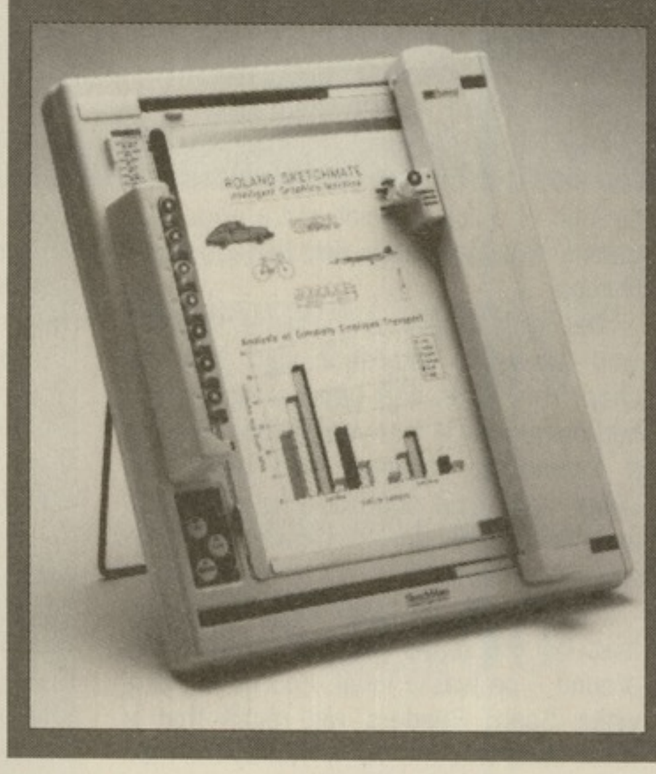
Oh no – more Turtles

Mirrorsoft has again joined up with Konami to produce a follow up to the phenomenally successful *Teenage Mutant Ninja Turtles*, Christmas's best selling game.

The sequel to *Turtles* is based on the Konami coin-op and is appropriately entitled '*Turtles - the Coin-Op*'. Mirrorsoft boss Peter Bilotta said: "The first Turtles release exceeded our expectations, and so we are delighted to work with Konami on a second Turtles program."

The game is due to be released at the end of the year but with the cult cartoon hero Bart Simpson here will the Turtles survive? ■

Pick up a Stika



Roland is launching two new graphics related devices; a portable personal plotter and an automatic sign cutting device.

Sketchmate is a compact A4 plotter which retails for £475. Designed for use with Computer Aided Design (CAD) and graphics packages, Sketchmate is compatible with any computer, the company claims. A special vinyl cutting device for producing signs is also supplied.

For a limited period you will be able to buy Sketchmate with *Autosketch 3* from Autodesk as a bundle for £550.

For more specialised vinyl cutting Roland has produced Stika. This is a small hand-held device which scans small designs or hand drawn logos and instantaneously cuts them out of a strip of vinyl. Stika retails for £599.

Roland can be contacted on 0252 816181. ■

• Stika – for specialised vinyl cutting.

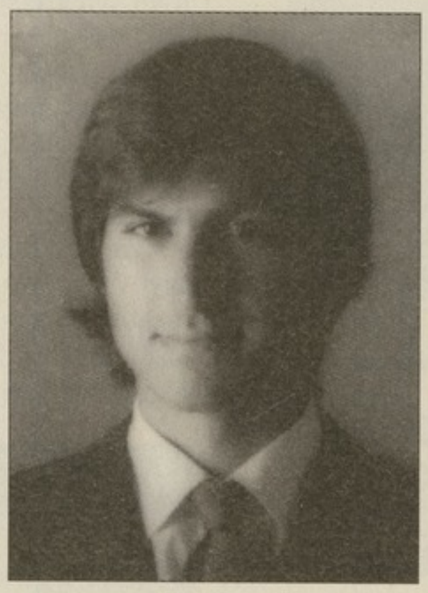
NeXT black beauty wows the buyers

NeXT Computer reckons it has competitors on the run with its much vaunted 68040 workstation – the firm last week announced that 8,000 were sold in the first three months of this year.

Chairman and inventor Steve Jobs was clearly delighted with the hi-tech machine's early performance. He said: "In our first full quarter shipping the new systems we think NeXT has nearly matched market leader Sun in shipments to the professional workstation segment."

But Jobs wants his matt black machine to grow so much in popularity that it will eventually become available to everyone. "Customers are beginning to grasp the benefits of NeXT's concept of 'UNIX for mere mortals' and they like what they see."

Some 30 per cent of the machines were sold here in Europe. UK managing director Richard Strong said: "Once our machines are on peoples' desks the take up is phenomenal. For every machine we sell, the buyer is effectivelly selling two more."



• Steve Jobs: "People like what they see"

The NeXT machine offers an easy-to-use interface and extraordinary power for prices not far exceeding that of mundane 486 DOS machines. ■

3-D for PC users

PC users will benefit from a new deal which enables Microsoft to incorporate high quality 3-D graphical routines from Silicon Graphics' IRIS Library of 3-D software into its own systems and applications.

The library was originally developed for Silicon's own range of workstations and has since been used for a variety of professional applications including architecture, colour publishing and computer animation. ■

NIBBLES

STE for music power

Atari's new Mega STE will be shown at the MIDI Music Show at the Novotel, Hammersmith, London this weekend (26-28 April). The company reckons that the 48Mb hard drive, 2Mb RAM machine should appeal to professional musicians as it provides the necessary power base for running hard disk recording systems. ■

Microsoft monopoly

The US Federal Trade Commission is investigating whether Microsoft has broken monopoly regulations by attempting to corner the market in operating systems and environments. This follows a joint announcement by the company with IBM of future plans for Windows and OS/2 which the FTC believes could be restrictive. ■

Mouse games

In a novel offer US Gold games software is to be bundled with new mouse packages from Naksha. The Series 3 and Series C mouse packages will come with *Their Finest Hour; The Battle of Britain* while *Operation Stealth* will be available with the Upgrade Mouse for the ST and Amiga. All packages will cost £29.99. ■

Speedy laptop

A super fast 64-bit laptop is due to be released next year by Matsushita Electric. The company has already released a desktop version which is said to be 70 per cent faster than most existing 32-bit workstations, and is selling well despite retailing at around £7,750. ■

Pen pals

The Software Publishers' Association (SPA) has set up a special group to study the fast-growing area of pen and stylus inputted devices. Its first meeting, held in San Francisco last month, was attended by 29 companies. ■

DOOR TO DOOR
***EXPRESS* INVESTIGATES**

As we discover another route planner bearing remarkable similarities to Door to Door, Express asks...

HAVE WE BEEN HERE BEFORE?

Another piece of the *Door to Door* jigsaw fell into place after last week's issue of *Express* went to press. Keith Pomfret picks up the tale....

It was our Editor, who thought he'd seen it all before. Andy Storer was casually teasing our PC copy of *Door to Door*, asking it for simple A to B routes and waiting to see where it would try to send him, when he remembered looking at another product that had behaved nearly as strangely.

Casting his mind back to the start of last year, he remembered receiving a route planning program for the Psion organiser that proved impossible to review. It was called *Routewise*, and the development ROM we were sent to evaluate drained the Psion's batteries in a few minutes – before the package managed to deliver a route.

As our Editor remembers, tempers frayed, the *Express* stock of batteries was exhausted, and a review was clearly impossible. So we sent it back and asked the company behind *Routewise*, Titan Computers, to supply a working version of the ROM – a replacement ROM never turned up.

CASH ROLLS IN?

Titan was the brainchild of one Glen Grant-Müller who booked the advertisements and sat back and waited for the cash to roll in. The money may well have rolled in but, as with the Geographic saga, the money didn't roll back to pay the advertising bills. Titan disappeared after it placed a series of half-page adverts in *Express* and other magazines.

Of course, we no longer had a *Routewise* ROM – so how could we compare the program to *Door to Door*? Phone the Bradford telephone number given in the *Routewise* advertisement, and you find it's discontinued. Then Jeremy Spencer, the Editor of *Computer Shopper* came to the rescue – nearly a year ago he'd reviewed a working version of *Routewise*, and still had the ROM.

We arranged a head-to-head test...

Just like Geographic, Titan Computers made bold claims for its product in advertising copy. And just like *Door to Door*, *Routewise* failed to deliver. In fact, *Routewise* proved to be amazingly like *Door to Door*. Plugging the ROM into our office Psion Organiser we decided to ask it to plan a route from Swindon to Stroud – the route that *Door to Door* had so much difficulty with.

The Organiser fired up with a screen that said simply:

`Routewise`
It cleared and said
`Titan Computers (c)`
`Type Start Town`
We typed `Swindon`
It asked for `'Y/N'` **confirmation**
It echoed
`Type end town`
We typed `Stroud`
It asked for `'Y/N'` **confirmation**
It then asked
`Output to printer?`
We typed `'N'`
It displayed
`Finding Route`

When it finally decided to offer a route it displayed the following:

```
To Stroud
From Swindon
Take the A4259
Take the A419/Jn 15 (M4)
TAKE THE M4
AT JN 15 (M5)
TAKE THE M5
AT JN 13(M5)
Take the A419
To Stroud
```

While the PC version of *Door To Door* suggested:

```
From Swindon
Take the A4259
Take the A419/Jn15 (M4)
Take the M4
At Jcn 15 (M5)
Take the M5
At Jcn 13 (M5)
Take the A419
To Stroud
```

Time to ask an expert. We handed the ROM and our copy of PC *Door to Door* over to Paul Whiteley who lives and breathes code. He said that the slow speed that both *Door To Door* and *Routewise* operate at was the result of poor programming, and added: "Both versions look like some very untidy compiled BASIC. They're not very well written."

Further investigations showed that many of the 36 data files accessed by the PC version appeared in the Psion version with the same file names. Clearly, there is more than a co-incidental link between Titan's *Routewise* and Geographic's *Door to Door*.

Checking our copy of the Leeds and Bradford A to Z, another strong link emerged – we reckoned it would be a five-minute drive from Titan's letterbox to Geographic's letterbox...

So it was off to Bradford. The imposing 'Titan House, Cleveland Road' address quoted in the *Routewise* advertisement revealed a row of terraced town houses in need of a lick of paint and a good gardener. We knocked on the door of Number 3.

Declining to give us his name, the man who answered the door said that the chap from Titan had been a lodger and had moved away last year without leaving a forwarding address. And when this lodger left, mail continued to arrive but was never collected. A sesnse of deja vu was developing . . .

The man at the door then mentioned that he still saw the man from Titan around – he was a local. And he drove a white Saab. Readers will recall that a white Saab was the car driven by the man from Geographic known to witnesses as John Gold.

We drove around looking for that Saab, but drew a blank. The Titan trail was growing cold, but it is plain there's more than a casual link between the two companies.

Can you help? If you had any dealings with Titan Computers and have any information on the current whereabouts of John Gold or Glen Grant-Müller, call the *Express* hotline – 0225 481772. ■

GOING FOR GOLD

On MONDAY 15 APRIL, at 8.45pm, the man known as John Gold arrived back at 3/5 Cranford place. But he didn't arrive in his striking white Saab.

TUESDAY 16 APRIL, at 10am, after a diligent search, we found a white Saab with a green stripe in a car park in Wilsden.

At 10.15AM, knocking on the door of 3/5 Cranford Place brought no answer but the figure of a man, identified by the neighbours as Gold was seen peering through the windows.

Around 10.30AM, corner shop owners Rita and Bernard Raby confirmed that Gold was back. "A neighbour saw him come in at quarter to nine last night," said Mrs Raby.

Just before 11AM, we found Wilsden postwoman Anne Edgerton just up the road. She confirmed that Gold was back. "He arrived last night and he's been here on other nights," she said, "he's been seen more than once in the last week."

11.30AM. We telephoned West Yorkshire Trading Standards Officer Graham Hebblethwaite and told him John Gold now appeared to be at 3/5 Cranford Place. Hebblethwaite was on his way...

Around 12.30PM business had slackened off in his shop, so Bernard Raby came with us to the car park and examined the white Saab. "Yes, that's the one," he confirmed. "That's his (Gold's). It hasn't got the diffuser on the roof."

We asked Raby if it was the car parked outside Dr Watson's house in Cranford Place until recently. "Yes, " he replied. That's his car."

Just after 1PM Trading Standards Officer Graham Hebblethwaite arrived, having parked in a public car park and walked down the hill to Cranford Place.

Susan Watson opened the door but refused to allow Hebblethwaite into the house. Hebblethwaite told *Express*: "There's definitely someone in there with her but she doesn't want to let me in."

Around 1.45PM, Hebblethwaite knocked on Watson's door again, but she still wouldn't let him in. "I've nothing to say," she told him. "I'll get in touch with a solicitor. I'm being harassed."

So Hebblethwaite asked her about the man currently in the house, only to be told that she was being visited by "a friend who had nothing to do with Geographic.' Watson then implied that if her 'friend' came to the door, he might not be as polite as she was.

Hebblethwaite withdrew.

STOP PRESS

As *Express* goes to press, new information has come to our attention. Next week we will reveal details of :

- **John Gold's reply to our investigation**
- **Another link between Gold and Muller**
- **The first legal moves against Watson**
- **The chances of getting your cash back**

Don't miss it - Out next Thursday!

ROUTEWISE

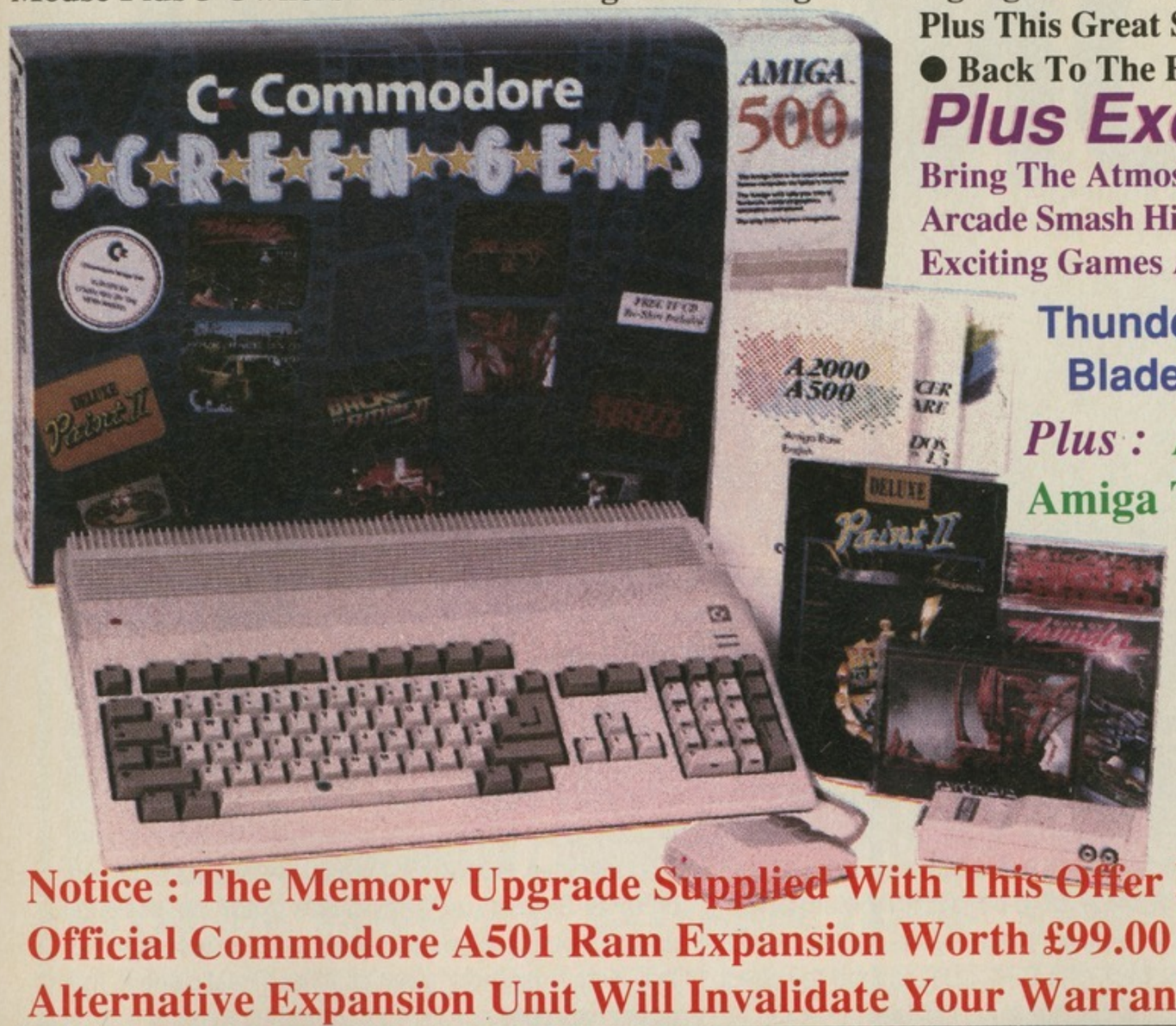
CROWN COPYRIGHT RESERVED
NOW AVAILABLE TO THE PUBLIC
THE FIRST ROUTE-GUIDANCE SYSTEM
FOR USE ON ALL PSION ORGANISERS

• Last year Express carried this advertisement. We still haven't been paid for it, and the product bears an uncanny resemblance to Door to Door. Titan Computers traded from an address that's less than 5 minutes' drive from Dr Watson's home and Geographic ... is there a link?

The New 1 Meg Amiga From Digicom

Following The Huge Success Of Our F-19 Digistar Offer,We At Digicom Are Proud To Present The Meanest Pack Available For The Amiga A500. This Unbeatable Deal Now Includes Commodore's Screengems Pack PLUS the A501 RAM/Clock Upgrade Plus Our Very Own Exclusive New Arcade Smash Hits Pack And The Chart Topping 1 Megabyte Version Of Kick Off 2!

Includes: Amiga A500 Computer 512K Keyboard PLUS A501 512K RAM/Clock Expansion Fitted To Give 1 Meg Memory Total ● Built-in 1 megabyte DS/DD 3.5" Disk Drive ● Multi-Tasking Operating System ● Latest Kickstart And Workbench 1.3 ● Superb 4096 Colour Graphics ● Speech Synthesis ● 4 Channel Digital Stereo Sound ● Notepad Word Processor ● Commodore Mouse Plus 3 Owners Manuals ● Amiga Basic Program Language ● T.V Modulator And All Connecting Leads And Cables



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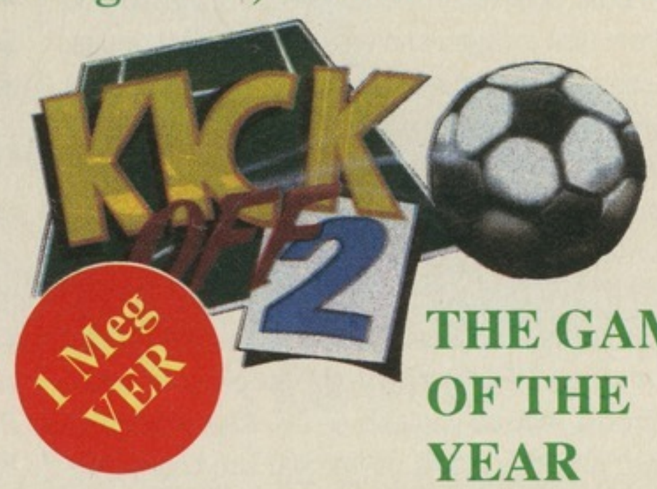

THE GAME OF THE YEAR

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CANON CAMERA

A LOOK THROUGH ITS LENS

Instant cameras aren't exactly new, but one that saves to disk and is compatible with all home computers is enough to raise an eyebrow. Keith Pomfret investigates

ION IMAGE

The Canon ION RC 260 is Canon's second still video camera. Instead of a film it uses electronic circuitry to capture what the lens sees and the resultant electronic image is saved to a two inch disk.

The Canon uses an electronic analogue process to capture and store the pictures. This means that each tiny two inch disk can hold 50 pictures. Unlike film though, the disks can be used and reused. Individual pictures can be erased or the whole disk electronically wiped for re-use.

The technology used is similar to that in a Camcorder. Instead of taking a continuously moving image and spooling it to a moving cassette of tape, an electronic 'time slice' image is taken through the ION's electronic shutter. This is then saved to the two inch disk.The ION is powered from an internal rechargable battery or a supplied mains unit and accessory pack.

A composite video output on the camera allows direct connection to a video recorder to view the pictures on a TV and save them to a video for playing back through a TV later.

FOR THE FAMILY

A typical home application would be to transfer the 50 pictures from disk to video and erase the disk for re-use. A video carousel of pictures could be built up almost instantly with the reusable media meaning that there's no wait or mess in processing pictures. A family photo album could be gradually built up on a video with a three hour tape having typically enough room for over 1,000 pictures in a carousel format.

An accessory module supplied with the ION allows connection to an RF modulator so the pictures taken can be directly viewed through a TV. The accessory module also provides mains power and can charge the ION's battery pack.

A preview feature lets you see pictures on a TV as you take them. Playback can be controlled by an infrared remote control unit. Images can be stamped with the date, time and time lapses between pictures. The ION weighs less than a pound and is ergonomically designed to rest comfortably in the hand. An integral flash means indoor photography is practical (at some expense to the battery) White balance is automatic and a switchable backlit feature adjusts the exposure so that subjects lit from the back have enough light at the front.

Exposure and focus are fixed and macro pictures can be taken using a switchable distance changer. When in use, an indicator in the viewfinder confirms that macro-photography is in use.

INTERFACE

The composite video and modulated video output options of the ION mean that it can be connected to any video digitiser that grabs a composite or TV signal.

For the home user that's good news as many affordable video digitisers accept a composite signal.

• Left to right: Zoom, standard and wide angle lenses on the Canon Ion still video camera. The colour pictures were taken on a bright spring morning and saved directly to a Macintosh via a frame grabber. Video digitisers make good results possible from most home and business computers. It's also compatible with your video recorder!

The signal from the ION is similar to that from a video camera or VCR so any digitiser that can digitise from camera or VCR should accept the ION as an input.

The Rombo VIDI range of digitisers was tried with the ION Rombo produces video digitising hardware and software for a range of 8-bit and 16-bit machines. Starting with the simplest machine, we hooked a VIDI interface to the back of a CPC 6128 and fed the direct video lead from the camera to the digitiser.

The CPC cannot digitise in true RGB, but instead offers three resolutions for a digitised picture to be displayed on the CPC. The Stop Press program has the ability to accept input via the Rombo interface too and with this it was possible to grab a picture directly from the ION on to a page display and print it directly as part of a newsletter.

Other 8-bit machines that we managed to digitise to (although not using rombo digitisers) were a C64 and a Spectrum. Again the results were as strong as the software.The still video image made it simpler for the various digitisers to grab a sharp image.

The PC, and Amiga were given the Rombo treatment too. The Canon ION was connected to the digitisers and the output was captured in its constituent red, green and blue elements. The VIDI software combined the three elements to make a composite picture. It was possible to display the picture on Amiga and PC and save to a file and reloaded into a DTP program.

To complete the round up of machines, we attached the ION to a frame grabbing digitiser attached to one of the *Express* Macs. While this whizzy piece of kit is probably beyond pocket money status (nearly a couple of grand) the results speak for themselves. The pictures taken with the ION were saved on the Mac and then imported into *Quark Xpress*, the program that we produce *Express* on. The images could be used as either colour or black and white and considering that they were 'snapshots' taken on a hand-held camera, the quality was good.

EXTRA FEATURES

Extras available for the camera included a film adaptor that allows you to take photographs of either colour transparancies or negative film and save it to the disk. In the case of negative film, a switch on the adaptor reverses the image to get a positive picture.

The small battery pack won't last forever and if you want to take pictures away from a mains power, there's a battery pack available that gives you up to 4,000 pictures or over an hour of uninterrupted playback. Using the remote control and the battery pack, you can control playback from a distance. Finally, two additional lenses change the ION into a wide or telephoto lensed camera.

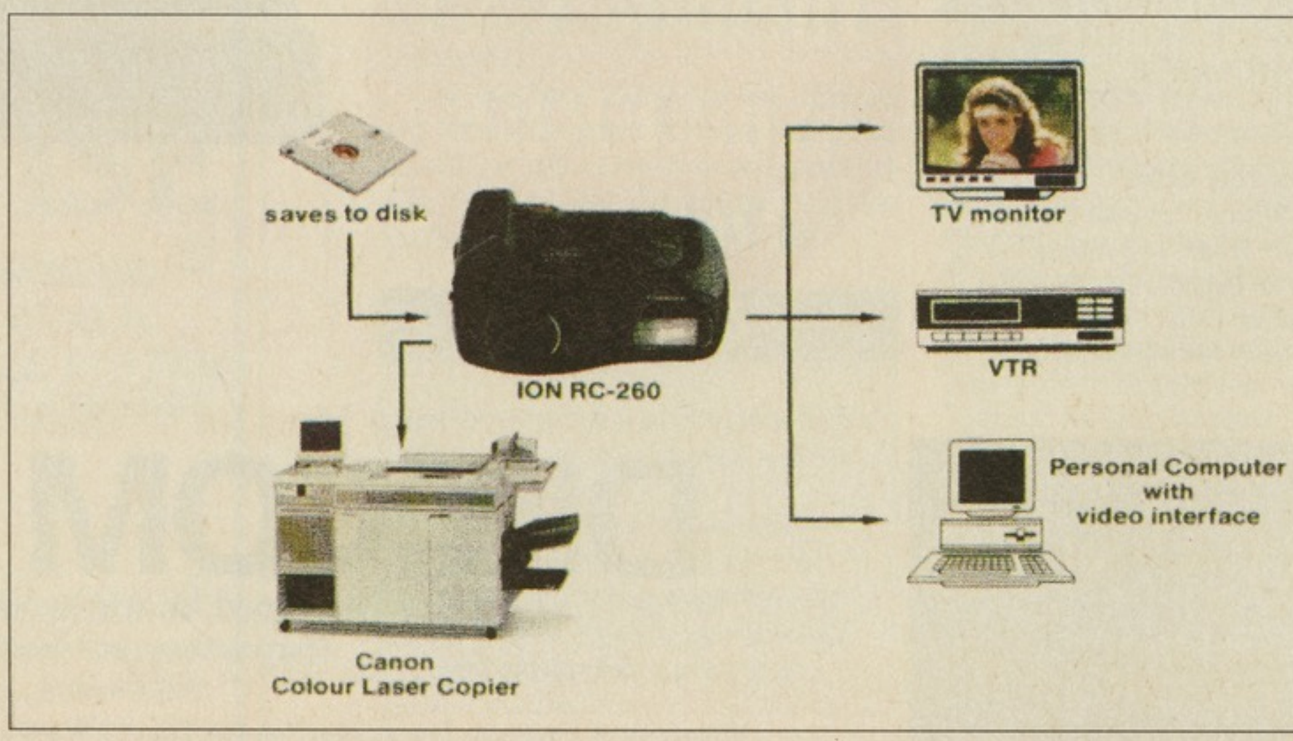
The ION is a fine piece of equipment worth the £499.99 price tag. The optional film adaptor (£149.99), power pack (£49.99) and lens set (£89.99) complement it and make it a useful and usable camera for snapshots, DTP work, colour and mono digitising and publishing. The reusable media and 'instant' processing of pictures make it convenient and highly specified. ■

TECHNICAL SPEC

Image pickup	1/2 inch CCD (786 pixels horizontally).
Video signal	Composite PAL colour
Lens	9.5mm (equivalent to 51mm in 35mm camera)
Range	1m to infinity (27cm in macro mode)
Resolution	lines/min horizontal 320
Dimensions	111x42x113mm
Weight	410g
Cost	£499.99

Conforms to ESCSC standard

Available from Canon UK Ltd on 081-459 1266



CITIZEN PRINTERS

Silica presents some great offers on the award winning range of high quality dot matrix printers from Citizen. Each Citizen printer is built in the UK to exacting standards, ensuring superb reliability and a very high quality of output. Our confidence in the quality of Citizen printers is such that we are pleased to offer a unique two year guarantee with every printer. Plus, if you purchase your Citizen printer from us, we will give you a Silica Printer Starter Kit (worth £29.95), *FREE OF CHARGE!*

FREE DELIVERY
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FREE STARTER KIT
Worth £29.95 - With every Citizen printer from Silica.

FREE COLOUR KIT
Worth £39.95 - With Swift 9 and Swift 24 printers.

2 YEAR WARRANTY
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WINDOWS 3.0
Free Windows 3.0 driver - In the Silica Starter Kit.

FREE HELPLINE
Technical support helpline open during office hours.

MADE IN THE UK
Citizen printers are manufactured to high standards.

144 CPS DRAFT 9 PIN

CITIZEN 120D+

The Citizen 120D+ is one of the UK's best selling printers. It has a stylish appearance and excellent features and performance for such an inexpensive printer. The 120D+ is available with either a serial or parallel interface and is an ideal first printer.

- *9-pin Printhead*
- *Print Speed 144cps Draft*
- *30cps NLQ*
- *Epson & IBM Graphics Emulation*
- *Pull Tractor & Bottom Feed*
- *Superior Graphics - 240×216dpi*
- *FREE Starter Kit*

RRP £233.83
STARTER KIT £29.95
TOTAL RRP: £263.78
SAVING: £112.20
SILICA PRICE: **£151.58**

£129
+VAT = £151.58

144 CPS DRAFT 24 PIN

CITIZEN 124D

The award winning Citizen 124D brings high quality 24-pin dot matrix printing within every computer users reach. It is the ideal choice where high quality printing is required at a budget price.

- *24-pin Impact Printer*
- *Print Speed 144cps Draft*
- *2 LQ Fonts (48cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
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- *FREE Starter Kit*

RRP £292.58
STARTER KIT £29.95
TOTAL RRP: £322.53
SAVING: £112.20
SILICA PRICE: **£210.33**

£179
+VAT = £210.33

192 CPS DRAFT 9 PIN

SWIFT 9 - COLOUR!

The Citizen Swift 9 is perfect for those who require high quality dot matrix black or colour printing at a budget price. The print quality of Swift 9 rivals that of other manufacturer's 24-pin models.

- *9-pin Impact Printer*
- *Print Speed 192cps Draft*
- *3 NLQ Fonts (48cps)*
- *8K Buffer*
- *Epson & IBM Graphics Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP £280.83
STARTER KIT £29.95
COLOUR KIT £44.65
TOTAL RRP: £355.43
SAVING: £133.35
SILICA PRICE: **£222.08**

£189
+VAT = £222.08

192 CPS DRAFT 24 PIN

SWIFT 24 - COLOUR!

The Citizen Swift 24 is one of Europe's best selling printers and has won awards including Printer Of The Year 1990. Its rapid print speed, quality and black or colour options, make it a natural choice.

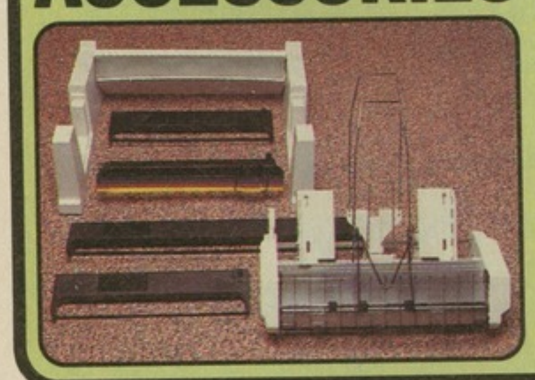
- *24-pin Impact Printer*
- *Print Speed 192cps Draft*
- *4 NLQ Fonts (64cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP £428.88
STARTER KIT £29.95
COLOUR KIT £44.65
TOTAL RRP: £503.48
SAVING: £199.15
SILICA PRICE: **£304.33**

£259
+VAT=£304.33

PRINTER ACCESSORIES



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PLEASE SEND CITIZEN PRINTER INFORMATION

Mr/Mrs/Ms: ..... Initials: ..... Surname: .....

Address: .....

.....

..... Postcode: .....

Tel (Home): ..... Tel (Work): .....

Company Name (if applicable): .....

Which computer(s), if any, do you own? .....

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EXPRESS MAIL

Write and tell Haydn Fitz-Williams what you think! Reach him at: *Express Mail, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies, even with an SAE and remember, only SOME letters win a fiver!

Hard Facts

I can't understand why there is such a big fuss about Geographic and *Door-to-Door*. If people are going to send £20 off to a company they've never heard of, for a product which is barely believable, they have to expect to be stung.

If people are going to be suckers they have to expect to be robbed. Good luck to Geographic.
Francis Todd,
Cambridge

A hard line to take, but I see your point. Don't you think, though, that It's precisely because there are trusting people out there that they have to be protected from the likes of Geographic?

An official complaint

I really must protest again at the shoddy editorial standards of *New Computer Express*. I refer to the Sectrum column in issue 127 written by Robin Alway and the biased comments he parrots on behalf of Mr. Glover.

There is still a bitter taste in my mouth of the handling of my last complaint. The childish remarks made, both in your letters page and in Alway's section, are not what I would expect from a magazine that is supposed to be aimed at intelligent computer users.

As this is the second time in just a few months that I have had to spend time and money attempting to correct the mistakes, I believe that at the very least I am owed a written apology.
R P. *Brenchley, Editor,*
Independent Spectrum and Sam User Group

Opinions, opinions. Anybody out there like to take a bet on how soon it'll be before we receive Mr Brenchley's next letter?

Wild thing

AS SEEN ON SCREEN

While on a wild video binge yesterday, I spotted an Amiga A500 in a sci-fi movie called *Crash 'n' Burn*, the sequel to *Robot Jox*. The Amiga was being used by a hacker to tap into a secret government database. It was also used to power up a gigantic battle droid that was asleep outside the building. The rest of *Crash 'n' Burn* was rubbish but *Robot Jox* is a bostin' movie.

In the new season of *Ghost Train*, Nobby, who's a sheep with a scouse accent, had a multi-coloured Amiga 500 on his desk which he uses to call up cartoons and music videos. I envy Nobby for he's met Vicky from Fuzzbox and I haven't.
Darren C Graham,
Birmingham

Sheep with scouse accents and multicoloured Amigas? Vicky from Fuzzbox, Robot Jox? What are we all missing out on?

Insane Hussein writes.

I SADDAM HUSSEIN OBJECT TO MY NAME BEING USED IN A FRIVOLOUS MANNER BY THE NEW COMPUTER EXPRESS TEAM AND UNLESS A PUBLIC APOLOGY IS FORTHCOMING VERY SOON THEN I WILL HAVE NO ALTERNATIVE BUT TO BUILD A TANK OUT OF THE BITS I HAVE LEFT AND SEND IT TO BRITAIN WHERE IT WILL SEEK OUT AND DESTROY ANY PERSON CARRYING A COPY OF YOUR MOTHER OF MAGS.
Saddam Hussein, Baghdad

There's no need to shout there Saddy Baby, loosen up will ya! Seriously though readers, you have been warned.

Scrappy Coupé stories

Your attitude to the Sam Coupé continues to be confusing. I keep asking myself why The Press seems bent on killing it off, in their own minds, if not in reality. A cynic might say that they have too much tied up in the success of the Amiga/Atari twins to spend any time on 8-bits (... a conspiracy theorist might say that yes...) **but with the Spectrum beginning to fade** (I can see a whole pile of letters being prepared at this very moment) **the Coupé seems an ideal replacement at £200 with disk, especially as it can run Spectrum software on top of its graphics and sound capabiltiies.**

Your news section had an article about the Coupé being far from dead, but this week's PD column (that would'nt be issue 127 by by chance would it? – Ed) **says ' it is already beginning to slip into cult status and obscurity, lumping it with machines like the Memotech.**

The Coupé is not fading, far from it - software, hardware and PD support is growing fast. It's easily the best value 8-bit, so why such scrappy coverage?
John Hawkins,
Hastings, East Sussex

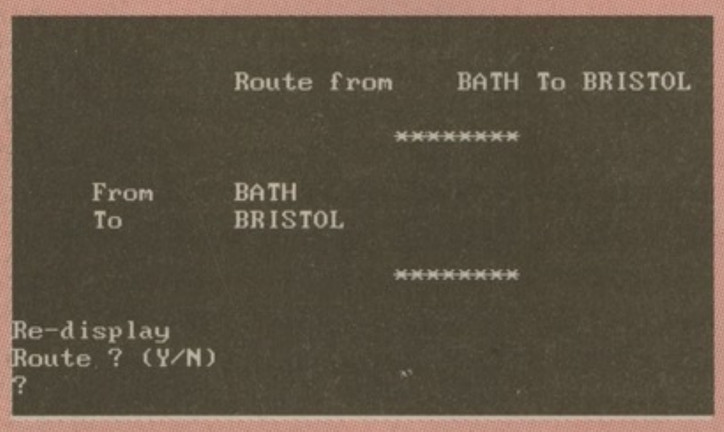
The scrappy coverage you refer to is a combination of two things. One, the guy who writes the PD column is perfectly entitled to his own opinions. Two, *Express* is not exactly flooded with press releases on the machine. In fact I doubt whether we receive more than one a month, if that. Of course, we could always wibble on about nothing. I get the distinct impression that the Coupé is all set to follow the QL in the 'what a wonderful machine, pity it sunk' stakes. A shame - but unfortunately something that seems to be becoming a reality. But I could be wrong - witness the next letter...

Play it Again...

In answer to your challenge in issue 107 here are a list of things that have been released on the SAM since 1 November

1Mb upgrade, SAM bus with realtime clock, MasterDOS, *Flexipage*, *Personal Banking system*, *Pipemania*, *Sphera*, *Samtape III*, *Sam Assembler 3* and *Klax*. Here's three SAM PD libraries that have been releasing a multitude of PD :
1) CMS, 70 Donald Drive, Chadwell Heath, Romford, Essex RM6 5DU
2) Turbo, 8 Healey, Lakeside, Tamworth, Staffordshire B77 2RF

£20 ticket to nowhere



• **Door to Door:** ***Requiring the patience of a saint but bringing Zen like qualities to the art of route planning ...or something***

When I saw *Door To Door* for under twenty quid, I knew that it was a con. My garage won't open the bonnet for twenty quid, the solicitor won't work for less than double that and during the cold spell a plumber wanted a three figure number just to come and look up my pipes.

How can anyone expect to get anything better than a third rate shoot-'em-up for that sort of cash? More out of curiosity than need, I sent a cheque and received *Door To Door*. It is as slow as a train, as user friendly as a Trabant and is the best piece of software I've ever bought.

At Easter I dialled up a route using *Door To Door* and set off for the coast. The journey seemed long, but there wasn't any traffic. While local radio told of traffic jams and tailbacks, the 60 mile further *Door To Door* route avoided these by picking the silliest route. Net result, we paddled in the briny two hours before my brother's family who followed the route given by the motoring services.

We'll be using the program again next Bank holiday, then using it as a curved ball for quiz leagues in winter.
Sonja Wilson, Stow on the Wold

Now come on Sonja, aren't we talking porkies here? I've seen *Door to Door* on the office PC – the route from Bath to Bristol is the best. It simply states Start Bath, End Bristol. This is obviously a somewhat Zen-style approach to route planning faintly reminiscent of the famous Buddhist anecdote; "When at the crossroads, take all four roads at once".

3) Fastline, 1 Ryeland Place, Kilgety, Dyfed, Wales SA68 0UX
Simon Cooke, Sale , Cheshire.

Thanks Simon for those facts and addresses. Unfortunately I had to cut the rest of your letter. This wasn't because it contained a critique of every reference to the SAM ever made in *Express* in the last 83 issues. No, this was because it ran to something like 1700 words and would take up nearly two of our pages. This unprecedented length had two further effects. One, I didn't even attempt to read it all and two, I'm even more convinced that SAM owners are developing a persecution complex.

Can we just go on the record one more time and say "*Express* has never had any intention of putting the SAM down". If truth be known the only reason *Express* never fully reviewed the machine was because MGT refused to let us have one unless it could supply the reviewer. That's the kind of bias you should be addressing.

And there's more...

I would like to complain about readers who have answered my advertisement in the reader ads page of *Express* issue 127 (not that issue again surely - don't you think this is all getting a little issueist? - Ed**). I was selling a B2000 RAM expansion board for the Amiga for £150 and a sound board for the PC for £95. Several readers have phoned only to try and knock the price down by as much as £20 to £40 and one reader wanted both the sound card and RAM card for £130! I would ask you readers to bear in mind the original cost of the items which are usually much higher than what the person is selling them for and therefore represent very good value for money.**
P.S. I am always open to sensible offers.
Mark Boules,
Kirdford, W.Sussex.

Oh dearie me. Buyers are always going to try and knock you down in the big wide world aren't they? There's no such thing as a sensible offer, just one a seller is prepared to accept.

We don't believe it

Since the adverts are free please accept this £2 enclosed for the charity of your choice
J Fallon
Strathclyde, Scotland

Now that's the kind of letter we like to receive – one's with money tucked in the envelope! Thanks J, your quids are off to Future Publishing's favourite Third World development charity, Intermediate Technology. And for that burst of generousity I was going to send you a fiver, but I'll send it to IT instead.

Advertising standards

I was one of the unlucky people who was ripped off by Geographic. I sent off my money and received the disk which wasn't even up to PD quality. While I appreciate the way in which *Express* is attempting to track down the guilty parties, can I ask why you ran the advert in the first place?

You see, I could argue that the mere fact that it appears in your mag is proof that the product is above board and legitimate. What do you have to say about that?
J G. Kennard
Barrow-in Furness

I don't think it's fair to blame us. Our advertising department does its best to verify whether a potential client is a bona fide trader or not. But even if a company passes all the tests, it still doesn't mean its either going to pay for the advertising or deliver the product. We ran Geographic's ads in good faith, it responded quite differently. As a result, in the future, *Express* is hoping to only run ads that are accompanied by a review product.

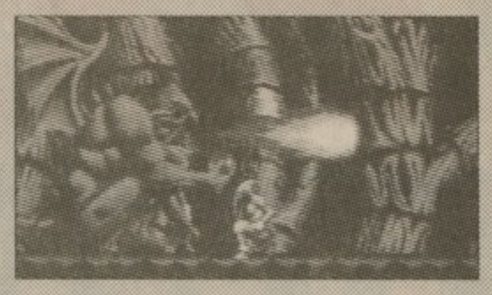
Powering up stereo

Are the digital hi-fi stereo batteries used to power the new Psion in the news article of page 3, issue 127, compatible with the old mono NiCad variety?

Also, will UK PC sales really increase by 17 per cent in 1990, a further 9 per cent in 1990 and just for good measure 8 per cent in the following year (1990)??
Adam Hill
Tile Cross, Brmingham

Errr...yes - well spotted there Adam. Seems like issue 127 had more than its fair share of cock-ups. UK PC sales are of, course, very difficult to quantify in any case - but yes, surely not *that* difficult. And as for the stereo batteries...well that little mistake reminds me of the reader who wrote in asking for help connecting up his Amstrad MIDI hi-fi stack to his Atari ST for a spot of sequencing!

WRITE A LETTER AND WIN A GAME SHOCK



Yes, it's true. In a fit of hitherto unknown levels of generousity, *Express*'s Powers that be have decided to give away free full price games to the best letters received each week. No more crummy fivers now mateys, no, we're talking serious bribes. Each week we'll be listing the titles up for grabs and so all you have to do is write to us at the usual address with your chosen mega-mucho missive, state the game you're after, and we'll do the rest.

So let's kick off with this week's five hot hits right now shall we?

- **ATARI ST - Psygnosis's Monster Pack featuring *Shadow of the Beast, Infestation* and *Nitro.***
- **AMIGA - Digital Integration's *Advanced Tactical Fighter II.***
- **SPECTRUM - Digital Integration's *F-16 Combat Pilot.***
- **AMSTRAD CPC - TV Games' *It's TV Showtime.***
- **PC - Electronic Arts' *Lord Of the Rings.***

There that's enough for starters. Next week there'll be a new list, so get writing on anything under the Sun and win yourself some relaxing downtime fun.

WHAT ON EARTH COULD HAVE HAPPENED...?

Our abject apologies 1

I have noticed that some of the personal adverts have been printed more than once in the same issue but in issue 127 you have excelled yourselves by printing the whole of the Tech Tips pages from issue 126 in a slightly different format. Is this a new editorial policy for the people who might have missed them first time round?
Paul Wigley, Shrewsbury, Shropshire

Our abject apologies 2

....Fair enough mistakes are made and the same pages might end up in a subsequent issue, but even the format of the questions and answers had changed which therefore means that Keith Pomfret has spent all week re-arranging last week's Tech Tips.
Mark Beswick
Wolverhampton, West Midlands

Oh we give up...

Keith Pomfret I must first berate
For after paying eighty-eight
I find Tech Tips a little deja vu
those items brought me to a pique
for seven of them were last week's
and only four appeared to be new

I realise mistakes are made
When Keith's been on the lemonade
And Andy Storer's been injecting thinners
But surely it's not much to wish
You keep the promises made last ish...
So where are all the bloody compo winners?!

And Who I wonder is to blame
For HF-W's christian name
Being spelled wrong in the editorial list?
If I had a wicked turn of mind
And was less than just a little kind
I'd say that half the staff were always pist!
Ian Heath, Wirral, Merseyside

Too tr..true, too hic true err hic true.

Ahem...Here on *Express* we've never been ones to shirk our responsibility when it comes to mistakes. As such, on reading your letter, our production editor, Julie Tolley, decided to take the only honourable course and top herself. She'll always be remembered here as the first martyr of DTP. Her family have our sincere condolences.

Actually it wasn't even her fault. Keith Pomfret's final words were "If you have a long enough piece of rope I will make my own noose, but there were definitely two sets of files and only one got used". It just so happened the Editor did have a long piece of rope.

The culprit was in fact a freelance sub. But at the end of the day it was Storer's responsibility and he missed it completely. A remarkable blunder and sudden end to the careers of two bright young staffers. Full obituary next week. Meanwhile thanks to the other forty million readers who spotted it and wrote in too.

• Julie Tolley apologising profusely for a major mistake that wasn't even her fault.

• The big K hitting the deck with the force of a steam hammer after hearing of the cock-up

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Macintosh

RUMOURS...

I have seen the future, and it's called System 7. Can't tell you any more than that, because I'm under a non-disclosure agreement which means that I could probably lose several vital organs just because of the first sentence. But when System 7 is released, it's going to make a lot of people very happy. A lot of people, that is, except those who've just bought PCs with Windows 3 because "it's just as good as the Mac". Prepare for a mass eating-of-words ceremony...

While I was at Stockley Park (Apple's HQ, known as Stockley Park to hacks so that we can laugh at people who don't know what it is) I noticed that a new painting had appeared on the wall. Now, I wouldn't know a piece of art if it came up and bit me on the butt, but I commented that it really did look rather nice. It's a multi-coloured background with a black, hand-drawn apple and the word Macintosh underneath. As I say, it looks rather smart. When I enquired where it had come from, I was treated to a slightly embarrassed silence. It turns out that it had been sitting in the warehouse for years, and had only just been noticed. Personally, I don't see what all the fuss is about. I mean, who is this Andy Warhol person anyway...

And apparently Apple's Creative Services team isn't too impressed with the painting, because the word 'Macintosh' doesn't have a little ™ symbol next to it...

In the States, Apple's distribution of both hardware and software doesn't rely on AppleCentres as it does over here. So Apple itself has to provide telephone technical support. Apparently, people who purchase System 7 and register will be able to ring a toll-free 800 number for tech support free of charge. Not that people who don't register will get left out. They will be given a 900 number which they can ring. American 900 numbers are similar to our 0898s, except that their premium rate charges make Telecom look positively philanthropic by comparison.

PRINTING IN STYLE

The StyleWriter printer is an innovation in Apple printers. But now that the machine has been in use for a little while, one or two people are expressing slight reservations about it. For instance, a couple of users have reported that, printing from some applications, the image appears slightly off-centre. The speed of the printer has also come in for some criticism; one user has complained that printing a page from *PageMaker 4* took well over 10 minutes.

Well, it is certainly true that the printer cannot output in 'faster' mode from applications like *MacDraw* and *Quark XPress*. But then, surely it wasn't aimed at such high-end users? I'd say that the people who think that the printer takes far too long to output pages should weigh that against the cost of the machine. If you want to print highly complex pages, get yourself a laser printer; why are you bothering with the StyleWriter anyway? For the rest of us, though, the machine still offers exceptional value.

APPLE IIE EMULATION

Apple in the States has finally released a card for the LC which allows it to emulate the Apple IIe. The card is claimed to enable about 90 per cent of all IIe programs to run on the LC, which means that at a conservative estimate the LC will be able to run more than 10,000 extra programs.

If you have a horde of Apple IIe programs, you may find that this card is the answer to your prayers – now you can run outdated programs for an

POSTCARD FROM AMERICA

The hardware hack is alive and well at the Berkeley Macintosh Users Group. Many oddball do-it-yourself kits have come from the hard-headed minds of BMUG members. They are given a shakedown, and then made into "real" products by their proud originators. Previous devices which have had their genesis in the BMUG braintrust include:

- **The BMUGNet kit, now Farralon's PhoneNet, the LocalTalk connector that lets you use existing phone wiring for your network.**
- **The MacRecorder kit, also now manufactured by Farallon, digitises sound.**
- **The MacChimney kit, was a cardboard hat that cooled early Macs without a fan.**
- **Extra-long keyboard cables, a conviction for murder cut short the cable maker's project.**

Now comes the BMUG *LC Video Adaptor* kit from the fertile mind of longtime member, Jay James.

Apple put a revolutionary (for Apple) capability into the Macintosh LC. One of the video formats supported by the LC's on-board video circuitry is Video Graphics Array (VGA). As the dominant video technology today, VGA benefits from the huge MS-DOS market, where intense competition keeps prices down.

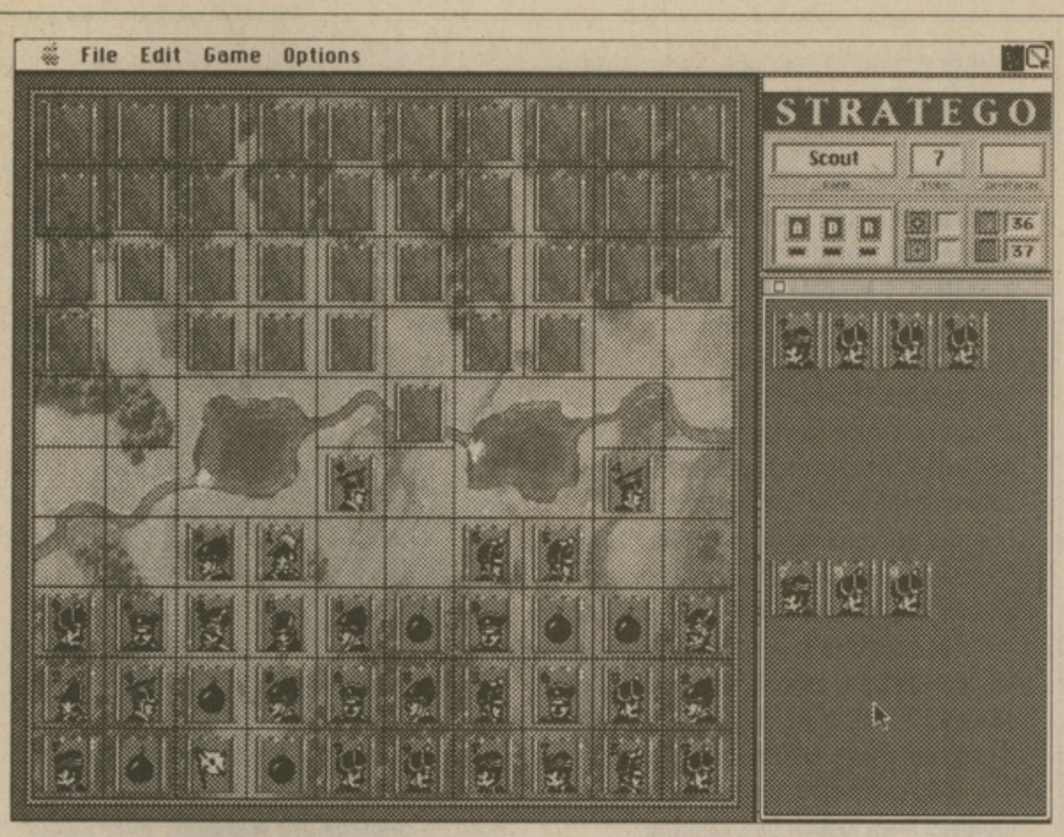
The kit is a special hardware adaptor to match the LC's outgoing video signals to the VGA monitor's incoming ones, and to switch from the Mac's two-row DA-15 connector to the VGA's three-row high-density D-15 connector.

You need to be careful about which VGA monitor you buy. The Mac LC's video output is weak, supporting only one TTL load. Many VGA monitors, even high-quality ones, sink more current than that. But the LC is so portable you can easily take it to the store to test it out.

The kit includes the wires, clips, plugs and plastic shell you'll need to make the adaptor. It's available for $12 plus $6 postage from BMUG, 1442A Walnut Street #62, Berkeley, CA 94709 USA.

It's a tricky soldering job, so if the smell of burning solder flux doesn't turn you on, you can buy the adaptor fully assembled for $43 plus $6 postage, from James Engineering, Inc, 6329 Fairmount Avenue, El Cerrito, CA 94530 USA.

David Morgenstern



• **Stratego *is based on the famous board game, and is deceptively difficult***

outdated computer on a state-of-the-art Macintosh! The card costs $199 in the States, which will probably translate to a little over £120 in the UK. For availability, dial 100 and ask the nice person on the other end of the line for Freefone Apple.

GAMES WITHOUT FRONTIERS

This week's game is another from Accolade. Called *Stratego*, it's based on the MB board game of the same name and is, as the name suggests, a game of skill rather than fast action. Indeed, the game won the Macworld game hall of fame 1990 'Best strategy game of the year award' – whatever that is.

The program is protected with a code-wheel; you have to match up lots of concentric rings and read off a code number before you can start playing.

If you've never played the board game, you may find that working out the rules is a bit tricky; the program's help menus seem to expect that you are already familiar with the basic idea. Still, it's not too hard to pick up, and quite fun when you do. The first time I played I thought that it was just a game of chance, but you soon realise that there's somewhat more to it than that.

I've no intention of actually describing the game play – if you want to know more, wander down to your local toy shop and have a look at the board game. If you're already a devotee of the game, Accolade's version is probably worth the purchase. The computer certainly plays a good game – at least, I haven't beaten it yet...

Stratego costs £29.99 and is available from Cache Connection: telephone 071 407 3463.

Ian Wrigley

PC

THE FAMOUS FIVE ARE BACK!

Have any of you lot read any Enid Blyton? No, I suppose you're all too young, aren't you? Ah, I remember when all the *Famous Five* books were banned from the local school library because they were sexist (I think that's what it was – I don't remember any rude bits).

Anyway, never mind all that. Enigma Variations is to produce a game based these gung-ho juveniles. Called *Five on a Treasure Island*, it's an interactive graphic adventure with a parser that's reckoned to be really clever. And you can take on the role of any of the protagonists too, by the way.

The only thing that worries me is that all the kids who buy this game (or who are supposed to be buying it) will be too young to remember the original books...

464 PLUS QUESTIONS

A M Lipsey has just bought a 464 Plus, and has a few queries about the machine:

"Why is there no tape counter? This can be very irritating in multi-load games, e.g. after reaching Level 5 of *Operation Wolf* I have to reload from Level 1 as soon as the game ends. If I don't rewind the tape far enough, I have to wait some five minutes before I'm told to reload, but if I go too far back, I have to wait 10 minutes for Level One to be found. I can tolerate waiting for games to laod, but surely not every couple of minutes?

"Of the 100 or so games I have, five go no further than the title screen. There was no problem on the CPC464. Why don't they load on the 464 Plus? The games that don't load are *American Football*, *Sultan's Maze*, *Death Stalker*, *Nigel Mansell's Grand Prix* and *International 3D Tennis*.

"Finally, can a disk drive be connected to the 464 Plus?"

Well, you're right about the tape counter, that's for sure. Multi-load games on tape are an absolute pain in the neck, and the idea of trying to get by without a tape counter... yuk!

The problem with games not loading is one we've come across before. Apparently, it's all to do with a minor modification inside the new machines that shouldn't make any difference at all. Unfortunately, programmers are a lazy bunch, and some of them in the past have taken a specific programming short-cut that didn't make any difference to the old machines but which manages to prevent

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THE FRENCH GO BATTY

Why do the French always turn out such weird games? The graphics are always brilliant, the sound is always great, but the gameplay is almost invariably odd.

Take *BAT* from Ubi Soft, for example. The game takes place way, way in the future, when you can travel from one point in the universe to another instantaneously (oh, BR's gone out of business, then). You're an employee of the ultra-secret *BAT* organisation, and you've been sent to the rough 'n' tough city of Terrapolis to track down a couple of crims. You can find out all this – and a whole lot more – by reading the manual, which is probably a good idea if you want to make any real progress, since it contains useful information.

• BAT's graphics are fantastic. Very colourful, very atmospheric and very original.

You carry out your search for these fugitives from justice by exploring Terrapolis and talking to the inhabitants. These folk can be quite friendly. They can also be extremely nasty – so tread carefully. Instead of typing in your commands, you get to use a sophisticated WIMP (Windows Icons Menus Printers) interface which is even 'intelligent'! (The function of the pointer changes according to the object it's over.) In this way you can get through the game options quickly and simply, leaving you free to enjoy the gameplay.

The graphics are fantastic. They're detailed, colourful, atmospheric and extremely imaginative. Unfortunately, the same can't be said of the sound, because there isn't any.

BAT takes a bit getting into for two reasons. Firstly, many games players have an instinctive dread of role-playing games. Secondly, it's a huge game with a complex scenario and lots of manual-consulting. It's not an arcade blast you can pick up in five minutes, but once you get stuck in it'll last you ages.

all keyboard input with the new ones! If only five games out of a hundred don't work, though, I guess it could be worse. Unfortunately, I doubt software houses are likely to re-issue Plus-compatible versions of 'problem' games, unless they're very recent and very big sellers.

Lastly, yes, we understand it is possible to connect a disk drive to a 464 Plus. Unfortunately it's not quite as simple as getting hold of an adaptor to let you plug the DD1's disk drive interface into the Centronics port of your Plus, though.

The problem is that the new 464 has the same ROM as the 6128, which means it has a disk drive controller built in. Plug in the DD1 interface, which has its own disk drive controller, and the hardware gets very confused and doesn't work. The answer is to disconnect the ROM in the interface, and then all should be well. However, I haven't tried this for myself yet, so I can't guarantee it.

STRIDER 2 TAPE POKE

Stephen Troup of King's Lynn has come up with a poke to give you just about all the help you could need with US Gold's arcade conversion of *Strider 2*. Simply delete the lines giving you the things you don't want...

```
10 REM Strider II (TAPE)
20 REM     by
30 REM Stephen Troup
40 MODE 1
50 a=&BE80
60 READ b$:IF b$="ST" THEN
CALL &BE80
70 POKE a,VAL("&"+b$)
80 a=a+1
90 GOTO 60
100 DATA 06,00,11,70,01,CD,77
110 DATA BC,CD,FF,BB,F3,31,6D
120 DATA 01,0E,45,21,94,01,11
130 DATA 80,04,79,AE,77,23,1B
140 DATA 7A,B3,20,F7,21,A9,BE
150 DATA 22,43,02,C3,95,01
160 REM Pokes.
170 DATA 3E,C9,32,D2,01
180 REM Infinite Robot Energy
190 DATA 3E,C9,32,FB,01
200 REM Infinite Human Energy
210 DATA 3E,A7,32,E6,12
220 REM Infinite Time
230 DATA AF,32,7E,01
240 REM Infinite Lives
250 DATA C3,40,00,ST
260 REM Leave Last Line.
```

Rod Lawton

Amiga

CHECKMATE GO 24-BIT

Back in the days when the Amiga was young, 4096 colours was thought to be pretty impressive. And indeed it was, for most computer users of the time were more accustomed to talking in terms of tens of colours, so it came as something of a shock to most of us when we had our first glimpse of a HAM digitised image.

These days, of course, HAM is no longer the knock your socks off thing it once was. Despite the quality of Amiga digitised images and artwork from such

well known Amiga artists as James Sachs, it's a case of been there, done it, read the book and worn the tee-shirt. What's next? 24-bit graphics of course.

Until quite recently, everyone thought that 24-bit graphics were jolly expensive things in which to get involved, which is hardly surprising when you consider that the vast majority of 24-bit graphics cards would have set you back around £1800, then on top of that you had to buy an expensive multisync to view your 24-bit creations. At that kind of price, it's no wonder that we're all still playing around with HAM.

If you want to get into some serious graphics, but can't quite afford the asking price of such devices as the Amiga Centre Scotland's Harlequin board, then you'll be pleased to learn that Checkmate Digital has taken on the exclusive distribution of the amazing HAM-E 24-bit RGB adaptor from US-based Black Belt Systems (*Express* passim).

When I last spoke to Steve Jones of Checkmate, he was still waiting for shipment of the first batch of HAM-E's to arrive, but they should be available by the time you read this. It's available in two different configurations – the basic unit costs £299, but there's also a more powerful version available for just £100 more that also includes an impressive piece of circuitry called the 'Anti-Alias Machine' which basically doubles the resolution of your 24-bit images.

I'm not going to say too much about the HAM-E system at this stage. You can read an exclusive review of the HAM-E system within *Express* very soon. For more, contact Checkmate on 071 923 0658. Don't forget to tell them *Express* sent you! And don't forget to stay tuned for that exclusive review.

A1500 UPGRADED

No, Commodore hasn't finally decided to offer Amiga 1500 buyers a little bit more than a rebadged 2000 – we're talking the Amiga 1500 shell, here, the one that used to be known as the Checkmate Amiga 1500.

Now the Shell is being manufactured by a company called A1500 Ltd (though Checkmate remains a distributor among others) According to the London-based company, there's an upgraded version of the successful A500 case conversion kit on the way. To be called the A1500 Plus, the new system offers many of the advantages of Checkmate's forthcoming IQLR Tower system. For starters, the £350 (approx) kit has expanded in size – it doesn't take up that much extra deskspace, but it's height has doubled to match that of Commodore's own Amiga 2000.

The reason for all this extra space is simple – unlike the original A1500, the A1500 Plus comes as standard with two 2000-compatible Zorro slots and (best of all) an Amiga video slot. With the A1500 Plus, A500 owners can now take advantage of 2000 video peripherals including genlocks, video processors, flicker cards and even the infamous Video Toaster (for American users only, of course).

Don't worry if you've already bought an A1500 – the company hopes to make an upgrade available which will allow existing users to upgrade the new system for just £150. Details have yet to be confirmed, so phone 081 907 3636 for further information.

HUNGRY HIPPOS

Meanwhile Checkmate has a product in the pipeline which is sure to appeal to anyone who wants the expandability of a 2000 without having to chuck away all their old A500 peripherals.

Called the HiQ Hippo (they're a strange lot at Checkmate), this handy box of tricks is basically a very powerful card cage that steals more than a trick or two from Checkmate's existing IQLR Tower system. Put simply, Checkmate has taken the expansion card capabilities from tower system and thrown them into a tiny box which connects to the expansion connector on the A500. For just £200, you'll get a box that offers three 2000-compatible Zorro slots, 1 2000 processor slot and a video slot, all of which are driven by a high power 200W power supply. At a later date, it will also be possible to upgrade your Hippo to the full IQLR Tower spec.

For information on this and any other Checkmate products, give the Checkmate lads a bell on 071 923 0658. Once again, I'll be bringing you reviews of all these new products as soon as my review models arrive (fingers crossed).

POWER GRAPHICS

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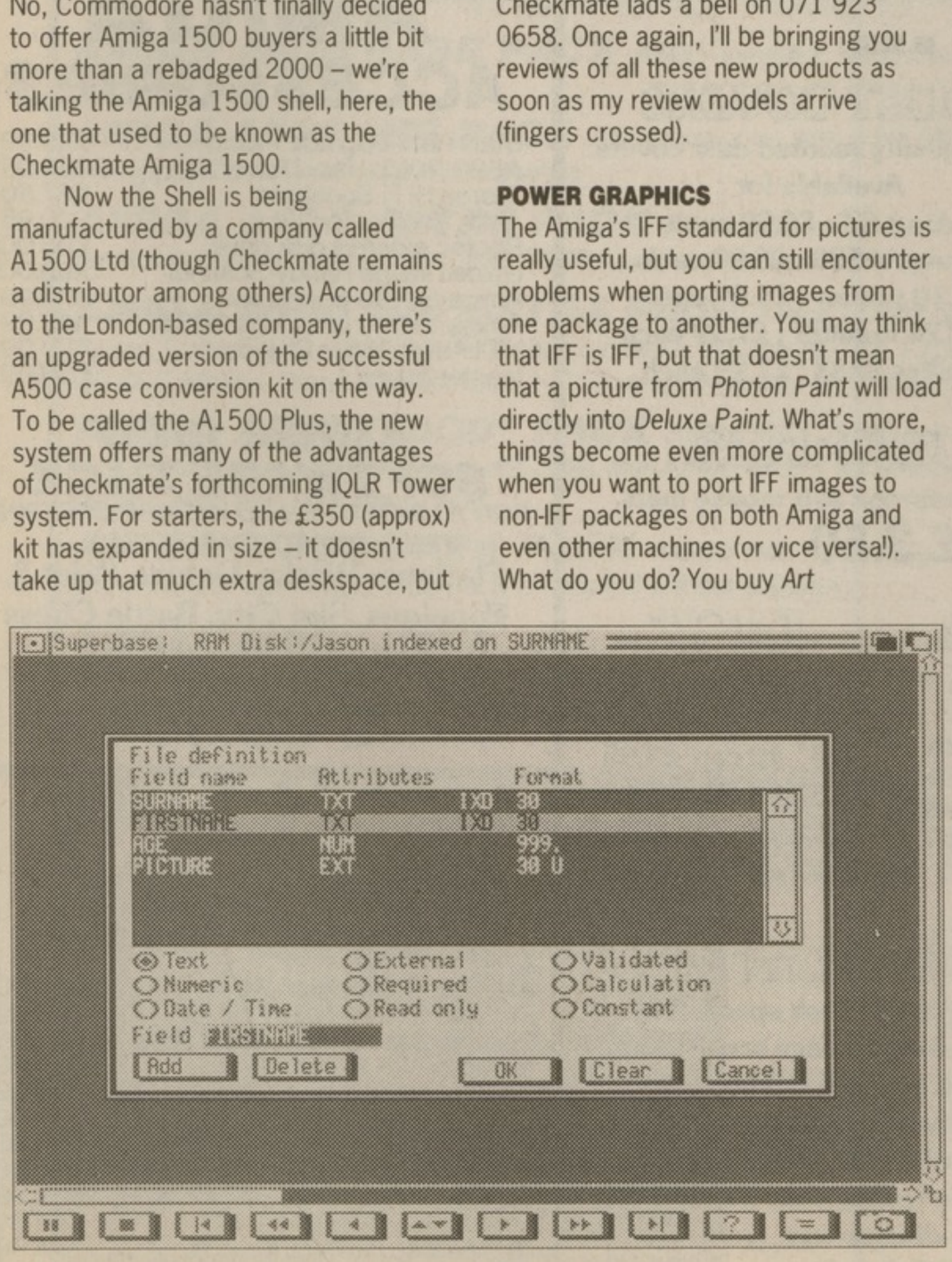

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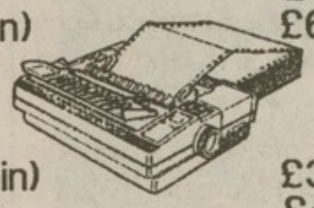

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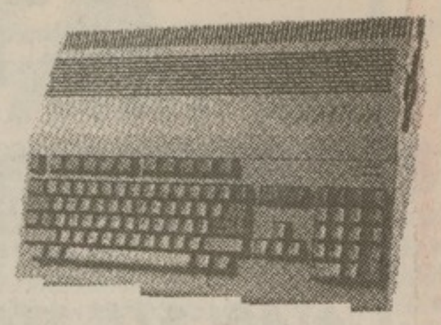

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Department Professional, that's what.

Thanks to those very nice people at HB Marketing (phone 0753 686000), I've been able to get my hands on this impressive package. And, after just a few days use, I'm really going to hate having to send it back (yes, we journos don't always get to keep review samples). Put simply, *Art Department Professional* is one of those packages which makes you wonder how you ever coped without it.

Badged as an image processing program, the *Art Department Professional* goes a lot further than what we've come to expect from such programs. Sure, it can clean up and manipulate images in just about any way you can imagine, but it also happens to be a very capable file conversion utility. As standard it comes complete with file handlers for IFF, GIF, MacPaint, PostScript, PCX, DPIIE (PC DPaint 2 Enhanced) and Sculpt. An extra expansion pack is available which adds support for Rendition, Mac TIFF and TARGA formats.

Anyway, I haven't the space to give you a full review at this moment, but you can expect more on this powerful package within next week's *Express*. If your lust for knowledge is too great, then you can find out more by phoning HB Marketing on 0753 686000.

CONTACT ME!

Everyone gets lonely at times, and I'm certainly no exception, so why not make my day by writing to me. I'm interested in just about anything you have to say that concerns the Amiga – be it tips for the latest games, tricks for the best serious software, or just a damned good rant about something you feel strongly about (Amiga specific, of course – I don't want to hear about your hatred for Austin Metros!).

If you have something to say, jot it down and send it to me at *Express*, 30 Monmouth Street, Bath, Avon, BA1 2BW. If your letter manages to keep me interested past the first paragraph, then chances are I'll reply within this column.

Jason Holborn

Archimedes

APRIL FOOL

I still think it's quite amazing how many people fall for April Fool gags. Surely people must realise the date when they see or hear something 'incredible'? My local independent radio station always manages to pull a fast one and after the event, everyone invariably says of course they knew it was a joke...

Funny that. You may think that the computer world was fairly safe from this sort of caper, well you'd be wrong. I vividly remember a brilliant one page ad (of which I still have a copy) from 'Wild Bill's Rodeo' in PCW the year after the ZX81 came out claiming all sorts of unbelievable statistics about the revolutionary ZX82. Closer to home, Acorn User published a games page a couple of years back that had many people thinking that a BBC version of *Zarch* was on the way. Last year, I think, it published a 'Disc Cleaner', and many years ago there was a software patch to emulate a touch screen.

• A pun on carrot provided the basis for an unexpected April Fool's joke.

This year I must admit I didn't keep an eye out for spoofs in the press but instead had one 'forced' on me while innocently getting on with some DTP work on *Impression*. The time: 10.30am, The date: 1 April 1991, The place: *Impression*'s main document window. What happened? Well, the pointer changed into a carrot.

If you've ever looked through the sprites file in the resources directory of *Impression*, you may have found the 'carrot' pointer, I thought it was just Computer Concepts having a laff with the obvious pun on 'caret'. I'd tried all the obvious ways of getting it to appear, and had just given up on it when suddenly along came April Fool's day and there it was!

Impression gets its time and date from the Archimedes' real time clock, so it's a fairly trivial matter to set it back to the 1 April (with TIME$='...' or with Alarm) and see for your yourself. A couple points to note. I think it only works in the morning (as it should), and I've only managed to get it to work on two machines (out of four). All four machines were running *Impression 2.05* or later...

POINTS OF VIEW

Viewpoints is the latest educational package from Wiltshire-based Sherston Software. I don't usually see many pure educational programs, so cannot really compare the package to others, however I felt it well worth writing about as it is really fun to play! There are three phases to *Viewpoints*; mapping, exploration and the database. You don't need to have all of these 'active' and switching one or two off enables the program to be used by various age groups.

The mapping section is used in conjunction with an A3 colour map supplied, the screen shows three 3-D views of your current location, forward, left and right. You can face in any primary compass direction and move forward. This allows you to explore the *Viewpoints* world. At certain key locations, such as the cliffs or the woods, you can also 'investigate'. This leads to a more detailed view of your current location, you can then 'Watch

and Wait' or move in 'Closer' and examine various highlighted areas.

In most cases an animal will appear and scurry, flap or wriggle across the screen. At this point the mouse is controlling a view finder and clicking a mouse button will take a photograph. Up to eight photos can be named, kept and later used in the database section.

I let my six year old half-sister loose on it, and she quickly found that the mapping was rather too difficult for her and the database was unnecessary. However she quickly came to grips with the exploration and had fun taking the pictures of animals.

I'm sure I'm glossing over many of the uses of the program, but the main use seems to be as a nature trail. However, switching off 'exploration' turns the game into a sort of treasure hunt. The supplied *Teacher's Book* has a large section of suggested activities, further studies and places to visit. All in all a very nicely put to together package. Sherston can be contacted on 0666 840433.

WHAT'S THE IDEA?

It seems that IDE (Integrated Drive Electronics) is the buzz word of the moment. Ian Copestake Software pioneered the use of this technology in Acorn machines (with the A3000 IDEA internal hard disk), but a number of other third party developers are very close to releasing their own hardware. I hope to bring a full report on the upsurge of IDE in a week or so.

ICS has recently announced the appearance of Oddules; these are similar to Podules, in the sense that they are hardware, but are connected to the Archie's IIC slow data bus (like the two teletext adaptors I reviewed in *Express* 123). These offer the potential of simple and cheap expansion with such devices as A/D or D/A convertors. The AnDi is now available and provides emulation of the old BBC user and analogue ports.

ICS has also released Cross-32, an assembler for the Archimedes, which I think the first to rival Acorn's own Aasm. It supports all the usual macros and conditional assembly. More importantly, lists of instructions and op-codes can be added for any processor; data for over 50 processors (including Arm 2 and 3!) is included. This makes Cross-32 an exceedingly versatile cross assembler.

For more information, why not phone ICS on 051 648 6287.

A MONITOR FOR ALL MODES

If you're currently stumped by the bewildering array of multisync monitors available, I can strongly recommend the Eizo 9060; this will set you back about £400, but is capable of displaying all modes without needing a VidC enhancer fitted to your Archimedes. This means it can display Mode 12 (and, in fact, all modes lower than 18) as happily as Mode 20. It also has lots of nice twiddly knobs on the front...

It's a 14-inch monitor, looks neat and gives a nice, stable picture. Its bigger and more expensive brother, the 9070, is a 16-incher of a type known as 'high line-rate multisync', which means that it's fine in multisync modes, but needs a VidC enhancer to display the normal modes like mode 12.

Fitting a VidC adaptor is pretty simple, but it does have one drawback; as it speeds up the clock rate on the VidC chip, which also looks after the sound, it speeds up the sound system too. And this sometimes makes the music on games too fast. Other games can't be played because they bypass the VidC enhancer software and use a normal mode (say 9 or 13) which can't be displayed on the monitor if it's a high line-rate type.

Ken Coumarin

64

MEGA DIZZY

One computer character guaranteed to send a shiver up anyone's olfactory nerve is Dizzy. If you have never heard of this egg-straordinary little bloke then you could do much worse than pick up a copy of the *Dizzy Collection* from Codemasters. For the princely sum of £9.99 you can get hold of every Dizzy game so far: *Dizzy*, *Treasure Island Dizzy*, *Fantasy World Dizzy*, *Magicland Dizzy* and *Fast Food Dizzy*. That works out at £2 per game – far cheaper than going out and buying each one individually.

CLOSER EGGS-AMINATION

Anyway, let's take a closer look at this egg-citing compilation (and I promise you, no more egg yolks). For those unfamiliar with the genre, I'll elucidate: Dizzy is an egg-shaped hero who makes his way through a flick-screen kingdom, collecting objects and using them to solve a plethora of puzzles while avoiding the ubiquitous nasty alien creatures. Err, that's about it.

Dizzy – A nice, gentle introduction to the series. Dizzy decides to kill the local wizard, Zaks when he uncovers a hidden encryption on his travels. Four ingredients must be found and mixed together to concoct a lethal potion which will destroy the evil wizard. Objects are scattered far and wide across a huge landscape, which includes a crystal mountain and an abandoned mine. The puzzles are logically structured in that they become more difficult the further you progress, but anyone with half a brain should be able to complete the game pretty quickly. The spectrum-esque graphics are detailed and colourful while a jolly (if irritating) tune keeps everything rolling along at a lively pace. One for the kiddies, methinks.

Treasure Island Dizzy – This time Dizzy's stupid behaviour has left him stranded on a desert island from which he must escape. Again the game is set in a colourful hi-res backdrop along with a couple of merry melodies. Very similar to the original in many respects, including the somewhat awkward control method. In my opinion this is the most difficult of the five games; the puzzles are incredibly tough and there

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• **The Dizzy Collection** *might be a bit samey but it is still very good value for money.*

is also a multitude of hidden traps and unfair situations. Couple this with the fact that you only have one life and you have a difficult task on your hands to say the least. Possibly offers the greater lasting interest of any of the *Dizzy* games, though.

Fantasy World Dizzy – This time Dizzy's girlfriend Daisy has been snatched by the evil king's trolls. Dizzy must rescue her from Fantasyland and everything will be peachy-keen. The presentation, graphic style and gameplay is virtually identical to that of the other Dizzy games. The music is a bit more bearable and playability is enhanced by the power to converse with the other characters who appear throughout the game. The puzzles are quite straightforward, as is solving the game. Not exactly the most challenging piece of software around, but it's great fun to play nevertheless.

Magicland Dizzy – The final Dizzy arcade adventure... hopefully. The evil wizard Zaks is back with a vengeance. All Dizzy's chums have been transformed into a variety of weird things and, in case you hadn't guessed, Dizzy has to return them to their normal states and send them back to the safety of the village. Poor chap. The game features some interesting ideas but it is possible to have too much of a good thing. Really it's a case of seen it all before and I was not particularly inspired enough to play the game through to its completion. A pity really, as the control method has been tweaked to enhance the playability, but graphics and sound do little to elaborate the already exhausted concept. Pity.

Fast Food Dizzy – Quite a departure from the other games, this is a warped version of *PacMan*. Dizzy runs around a maze collecting food and avoiding the nasties and err...goes onto the next level (of which there are dozens). A tad samey, but I must admit to playing this one quite a lot. It's enjoyable, cute fun.

In conclusion, the whole package represents great value for money. My only gripe is the saminess of the four arcade adventures. Still, give it a try if you have a spare tenner lying around (and if you have, perhaps you should consider buying a wallet as well).

DIZZYING SOLUTIONS

As if that was not enough to make you egg-static here are a few tips for Dizzy to get you started. I hope they are especially helpful to Andy Prestwich of Oldham, who wrote in to say he was having a few problems with the game. Following is a list of all the objects in the game, and what to use them for:

FLAMING TORCH – use it to light the sticks under the cauldron.
GREASE GUN – drop this on the minecar to move it.
BIRDSEED – when carried it kills any birds that touch you.
GRAVEYARD KEY – opens the gate at the graveyard.
PLASTIC RAINCOAT – will protect you from acid rain.
GHOST HUNTER'S LASER – kills the ghost that haunts the chimney.
THREE IN ONE OIL – allows the drawbridge winch to operate.
CROWBAR – use it to open the secret hatch at the foot of the mountain.
HARD HAT – will protect you from falling stalactites.
BAG OF GOLD – drop this on the bucket next to the hermit's house. Or else.
BOLT CUTTERS – use it on the pile of chains down the mine.
EMERALD – drop this on the gravestone with a hole under it.
SPADE – drop onto the hollow ground to dig through it.
GARLIC – use it to lose friends. Sorry, when carried it kills any bat that touches you.
DRY ICE – use it to freeze the lake.
INSECTICIDE – will kill any spiders that touch you.
MUSHROOM TROWEL – drop onto the mushroom after the spade has dug the hole.
AMULET – will protect you from Zak's firebolts.

And the ingredients you need are: Cloud silver lining, wig, dux feather, troll brew and an empty bottle.

Drop all of these into the cauldron, collect the full bottle and drop it next to Zaks. You'll have to cope with the rest on your own.

PEAK PERFORMANCE

It's back to normality after last week's foray into the world of the Fuzzy Wuzzies. Look out for more exclusive previews right here in this column.

I must come clean. I am one of the many people (sane people I might add) that regularly tune into *Twin Peaks*. This cult American 'soap' from the mind of David Lynch has had me glued to the box every Tuesday night, even though the storyline seems to jump hysterically between several plots and sub-plots.

The reason behind my idle banter?

The *Twin Peaks* computer game. Aww, come on. Somebody out there must see the potential! Empire, what about a *Twin Peaks* soccer game? Codemasters, how about a *Twin Peaks* simulator? Seriously, the convoluted storyline coupled with the almost surreal thoughts of Agent Cooper would make a rather challenging adventure/strategy game. Snap up the licence, someone, anyone, please! It could turn out to be a 'darn fine' game.

And remember, if you have any deep and incisive comments to make about the C64, or perhaps a few tips and hints on games, write in to me at the usual *Express* address: Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW.

Andrew Roberts

spectrum

BOUNCE RIGHT BACK

You must know by now that I do like a good enthuse every so often and I can feel a hefty session coming on this week thanks to a game I've been playing recently. Rather amazingly I actually went out and bought, from a shop with money, Audiogenic's *Helter Skelter* and can confirm it's absolutely excellent even if the £10.99 price tag did seem a few quid too expensive to someone who remembers games when they were £5.99, and shops used to treat customers with respect, and the land around my house was fields as far as the eye could see...sorry, I just got a bit carried away.

Anyway, *Helter Skelter* is a cute and very fluffy platform game in the same cuddly mould as *Bubble Bobble* and *Rainbow Islands*. You take on the spherical form of Billy the Ball and have to bounce your way through 90 screens killing various monster-type things by squashing them. The obligatory catch is that these monsters, who if the truth be know look a bit too cute for baddies, are only susceptible to your squashing antics when a small arrow appears above them. If you don't time your attacks to perfection and you land on an impervious creature Billy splits in two and the difficulty of your task has suddenly doubled.

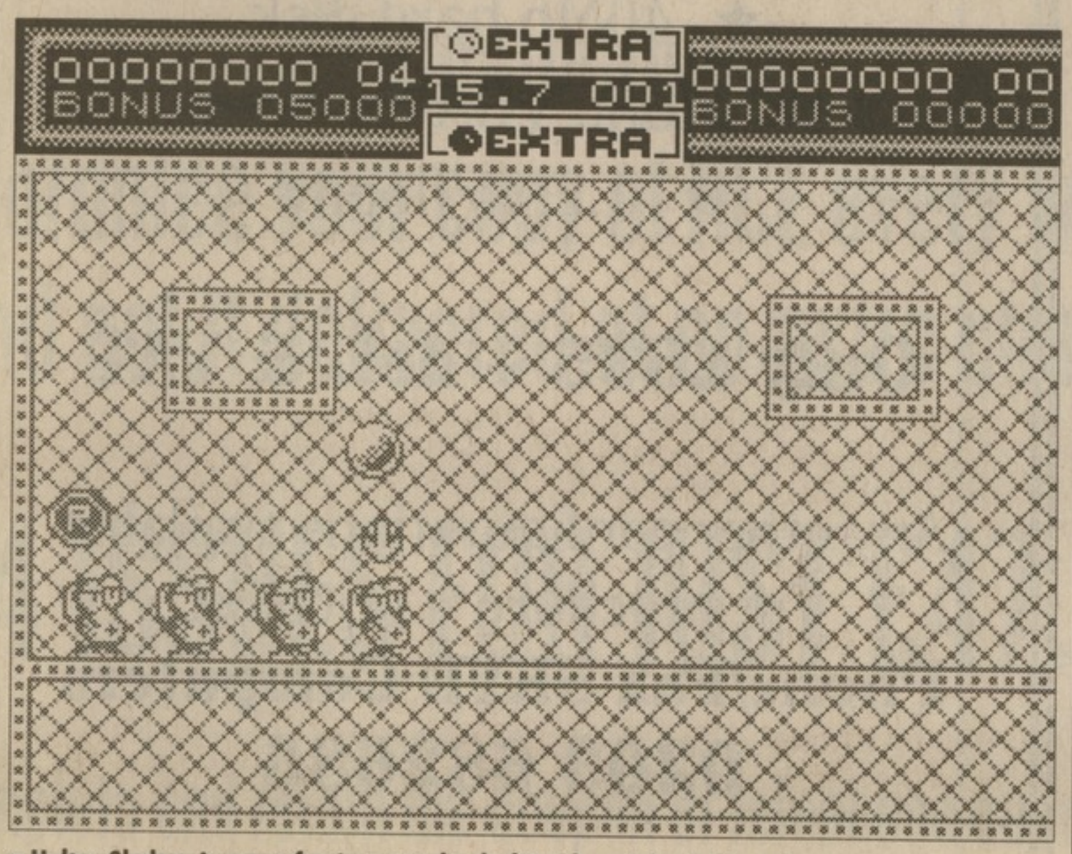
In fact, the game is pretty hard to get the hang of in the first place because controlling Billy's bounce is far from easy. Before you know what you're doing it's all too easy to go pinging around the screen at speeds that make you fear for your rotund comrade's life. And once you do get used to the controls there's still a viciously tight time limit to compete against and some fiendishly designed screens which you don't think you'll ever manage to complete. Luckily a few different bonus tokens appear from time to time and if you manage to land on them a variety of effects can be yours including an immediate exit to the next screen, freeze monsters or stop the time. And you'll definitely need all those cheats if you ever want to get to the heady heights of screen 10 and beyond...

Helter Skelter is definitely one of the best things I've seen round these parts for a while although it has to be said these cuddly platform games do tend to appeal to me. Basically, If you cried when Bambi's mum bought it or look at clouds and see the shape of jolly pixies, you should find *Helter Skelter* hugely addictive. Personally I love it and would strike up an intimate relationship with anyone who sends in some appropriate passwords, pokes or tips!

WHEREFORE ART THOU?

I needed to get some new three inch disks for my sadly coffee stain-scarred Plus 3 the other day. The trouble was I couldn't find any in the huge metropolis come tourist theme park that is called Bath. Authentic "My Parents Went To Bath And All They Bought Me Was This Hilariously Funny T Shirt" perhaps, but no disks I'm afraid, spec chums.

I bring up the whole sordid affair because I wondered if anyone could tell me the location of these mythical items. If you know of a mail order outfit that sells disks at ridiculously cheap prices or even not really that ridiculous at all prices scribble the relevant details down and send it to me at the usual *Express*



• Helter Skelter *is great fun in a cute kind of* Rainbow Island*-ish style.*

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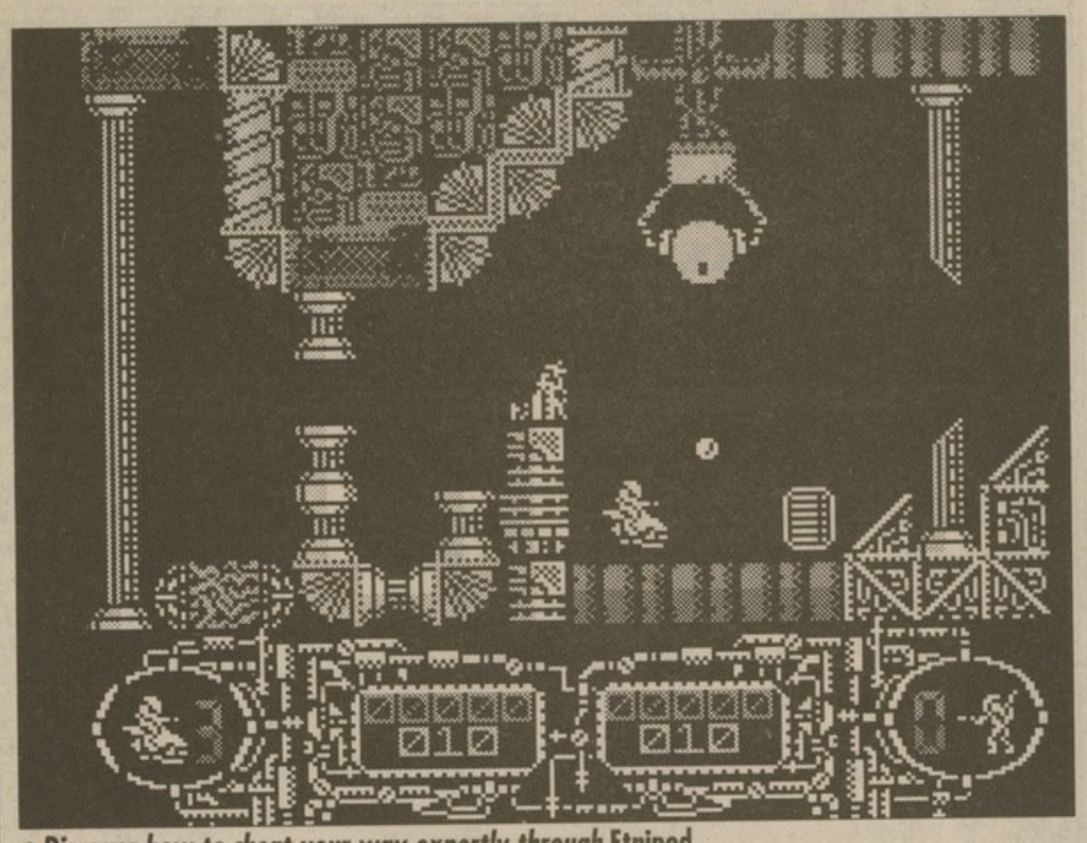

• *Discover how to cheat your way expertly through* Etnipod.

address. I'd be sincerely grateful to you and naturally details of other cheap Speccy retailers would also get a heroes welcome and guarantee the kind sender a space in my heart.

THE RETURN OF THE HACKMAN

I think you're going to find it very hard indeed not to break into a spontaneous and rousing round of applause when I tell you that here's another hack from Steven Kemp.

It's for *Ethnipod*, a readers game given away on *Your Sinclair*'s last corking cover tape. To make it work for you, type in the first five lines (10 to 50) plus which ever other ones you want from 60 to 110. So if, for example, you don't want infinite lives for player two, feel free to leave out line 90. Once you have picked the appropriate lines make sure you finish with line 120 which is the end marker. Then save it to tape for posterity, type RUN and play *Ethnipod* from the start.

You've got no problems with that have you? All that remains for me to do, then, is say hello to everyone who knows the thoroughly lovely Steven Kemp (because he asked me to) and say thanks very much to the same bloke. "Hello and thanks."

```
10 REM Ethnipod by Steve
20 CLEAR 24499 : LOAD "" CODE
30 FOR F=65054 TO 6E5
40 READ A : IF A<256 THEN
POKE F,A : NEXT F
50 RANDOMIZE USR 65000
60 DATA 62,X,50,112,98 : REM
X = No. of lives (1 - 255)
for Player 1
70 DATA 62,Y,50,131,98 : REM
Y = No. of lives (1 - 255)
for Player 2
80 DATA 175,50,9,239 : REM
Infinite lives Player 1
90 DATA 175,50,13,240 : REM
Infinite lives Player 2
100 DATA 62,255,50,154,98 :
REM 255 Grenades Player 1
110 DATA 62,255,50,152,98 :
REM 255 Grenades Player 2
120 DATA 195,199, 97, 999 :
REM End Marker
```

Here's the usual plea for tips but this time with a subtle difference.

I would really welcome pokes, hints, wrinkles, routines and short cuts for any serious Speccy software (DTP or Art package for example), hardware widgets of any description, programming and just general Spectrum using. That's not to say I don't still want your game related help as well. Heavens no! In fact I want both.

Send everything to Robin Alway, here at *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW. I will be waiting beside the letterbox with an air of excited expectation.

Robin Alway

ST

LIGHTS ALIVE

If your house is anything like mine, then you'll probably have somewhere in the region of 10 remote controls kicking around the place. Everything from the garage door to the food blender has its own controller. The problem is that the stupid things have an anoying habit of getting themselves lost down the backs of chairs.

Enter Romulus Data Systems. This company has come up with an infrared controller unit. This device has the ability to "learn" the signals from a remote. Once the signal data has been stored in memory, you can then control all your remote devices using the ST and mouse.

The control software which comes with the package lets you to set up a sequence of commands. So, for example, you could have a series of disk files set up for each Compact Disc you own. This file could contain a list of commands designed to set up the CD player to play only your favourite tracks.

Time delay functions mean that you could switch the television or the lights on or off at set times, either as a burglar deterrent or a great alarm clock. The unit plugs into the printer port and comes with a through port,

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meaning you can still have the printer attached while it's in use.

ST-IC, which runs on all flavours of ST with any memory size, costs £39.95 including postage and packaging. It's available from Romulus Data Systems, 2 Downs Grove, Southview Park, Basildon, Essex, SS16 4QL.

YOU CADAVER TODAY

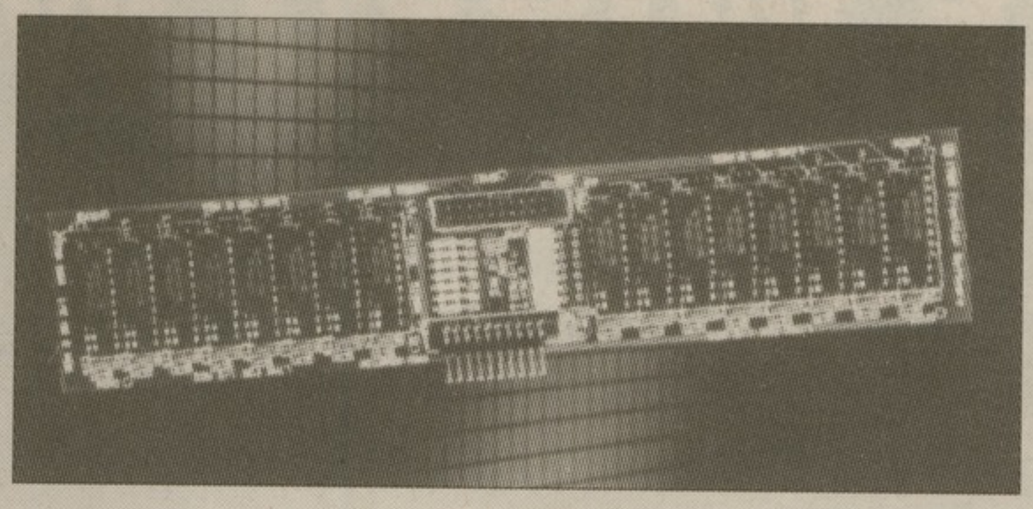
Prolific programming team, the Bitmap Brothers, has a treat in store for fans of its dungeon adventure game *Cadaver*. In between releasing the ever-so-stonking games *Speedball 2* and *Gods* and (I'm reliably informed) purely in their lunch hours, the boys knocked off a levels disk for *Cadaver*.

Cadaver - The Pay Off, from Renegade, is a brand new levels disk which can only be used by people who own *Cadaver - The Original Game*, from Mirrorsoft. The disks contains four new levels, comprising about 200 rooms. The new levels kick off from where the original game left off: The Charon Arms. Karadoc (he's the star of the game) has been double crossed and now has to pursue his patrons.

The Bitmaps tell me that they've added completely new graphics. Dan Malone, the gifted graphic designer, apparently spent many days researching the interiors of bars and hostelries, just to get the game looking right. What a star, such sacrifice!

Should you feel that the Bitmap Brother's bank account obviously needs a cash injection fast, then you can spend out £14.99 in mid-May, make your checks payable to "The Eric Matthews Florida Retirement Condominium and Jacuzzi Complex PLC".

CHEAP RAM UPGRADES



Frontier Software produces the popular Xtra-RAM upgrade series for the ST. The boards have are excellent because they require no soldering to be attached to any flavour of ST.

A half megabyte upgrade board will now cost you £69.99, which is a very competitive price. A 2Mb RAM upgrade weighs in at £159.99, which seems like a lot until you realise that that's about the same cost as six games.

The boards are available direct from Frontier Software at P.O. Box 113, Harrogate, North Yorkshire, HG2 OBE, telephone 0423 567140.

DTP USER GROUP

As computers get more and more sophisticated, so the software which runs on them becomes more and more sophisticated too. Desktop publishing software is renowned for being difficult to fathom; there's only so many key combinations you can learn.

User groups are an excellent way of obtaining help from enthusiasts in exactly the same position as you, so DTP users will be pleased to hear that their needs are now catered for by an ST DTP user group.

The group caters for users of all the popular DTP programs, such as *Calamus*, *Pagestream* and *Timeworks*. Ancillary programs such as *Calligrapher* will also be covered by the group. Write to Dave Howell at Flat 3, 68 Corporation Street West, Walsall, West Midlands, WS1 3QR, or telephone (evenings only) 0922 649410.

Andy Hutchinson

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WHOLE WIRED WORLD

All around the world he's been looking for you. He is Steve Gold, and he's been looking for the latest computer-related information for your files. This week Nintendo's troubles, the ST plays skin games, and that's not all...

NINTENDO'S GAME WIZARD DEFECTS TO LUCASFILM

Howard Phillips, who for a decade has been Nintendo America's `Game Master,' has taken a new job with Lucasarts Entertainment, a division of Lucasfilm Games. His new job is as Lucasarts' head of video games and learning products. Phillips has worked at Nintendo US since it was first formed in 1981 and was creative director for games for the last two years. He is reported to have evaluated every Nintendo and Nintendo licensee game produced. That's around 450 NES games and 100 Game Boy cartridges.

His new post with San Rafael (that's California) based Lucasarts will make him responsible for both game design and development. Plans call for him to act as a liaison between development and marketing unit. On top of all this, he will also be serving on Lucasfilm Games' executive committee, offering advice to the company's senior managers.

• Howard Phillips: Leaving Mario and friends to give Lucas aid.

CHEAP SKINS FOR THE ATARI ST

You've probably all seen plastic keyboard skins for PCs, but how about one for the Atari ST?

The Computer Supply House is offering a variety of keyskins, as it calls them, for the 520 and 1040 ST series, as well as Mega and TT ST machines. Skins for the Portfolio are also available.

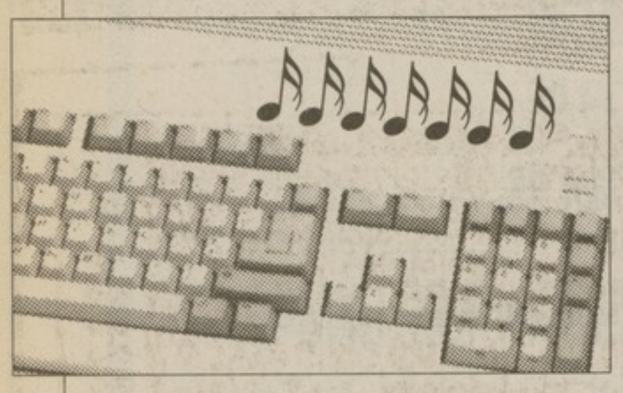
To the general public, the company is selling the Keyskins for $25.95 plus $2 postage and packing.

As a special offer, however, the company is selling all of its Keyskins for $19.95 with this price including US postage and packing.

I don't know whether they'll ship the keyskins to the UK for nothing, but there's no harm in asking them nicely!

Contact: Computer Supply House, Reference BBS Ad1112 Second Street Kenai AK,99611 7210, United States. Tel: 0101 907 283 5837

DIGITAL SAMPLING DEBUTS ON THE AMIGA



Beta Unlimited of Brooklyn has come up with an interesting device called Audiolink, a 16-bit linear sound sampler for the Amiga. The as yet unpriced system supports CD quality sample recording, editing, and playback of 16-bit audio at sampling rates of up to 48KHz in stereo, and 96KHz in mono.

A prototype version shown at the recent World of Amiga show in the US, consists of an interface card, a stereo analogue to digital converter and an external box of tricks as well as sample editing software.

According to the New York based company, Audiolink can receive signals from both analogue and digital audio sources. It can also process the signals onboard without tying up the Amiga's microprocessor. This, the company claims, allows the Amiga to run sequencing and/or notational software in real time. The hardware, by all accounts, quite neat, the system has a DAT I/O digital interface which also supports the S/PDIF format interface. This, the company claims, allows direct digital recordings to be made to and from a DAT (digital audio tape) machine.

As supplied, the basic system comes with eight stereo channel pairs and is fitted with 1Mb of RAM, expandable to 16Mb on-board. Contact: Beta Unlimited, 87 Summit Street, Brooklyn, New York NY 11231, United States Tel: 0101 718 852 8646; Fax 0101 718 6245738.

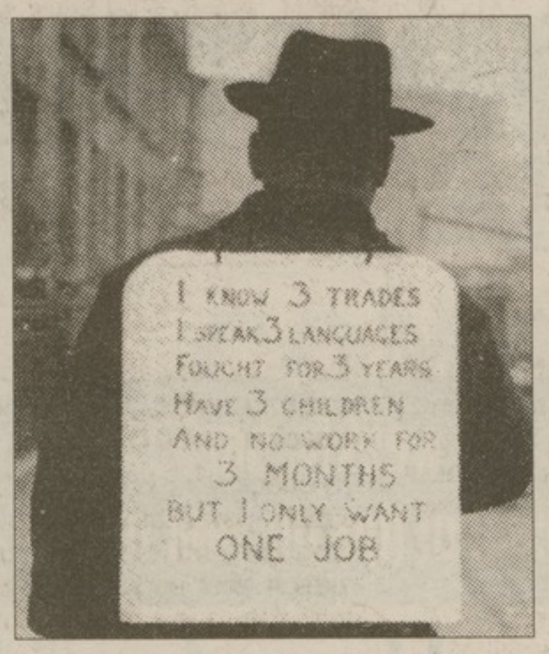
GFA OPENS FIRST US OFFICE

GFA Systemtechnik of Dusseldorf, Western Germany, best known for its GFA BASIC package for the Atari ST and Commodore Amiga, has set up a new company in the US called GFA Software Technologies. According to Maurice Giguere, president of the new subsidiary, the aims of the US operation are: "to expand the use of this powerful language by providing call in as well as bulletin board access to GFA technical personnel to assist programmers in their development efforts".

With immediate effect, the US operation is selling the English language version (V3.5) of GFA BASIC for both the ST and the Amiga at $94.95 for the interpreter package, and $54.95 for the compiler module. In parallel with the US office opening, GFA has announced that versions of its GFA BASIC have been released for MS-DOS and Windows 3 compatible systems. Prices start at $249 for the MS-DOS 286 version through to £495 for the 386-based Windows 3 version. According to the company, ST and Amiga programs written in GFA BASIC can now run on Intel platforms when the package is loaded.

Contact: GFA Software Technologies, 27 Congress Street, Salem, Ma 01970, US. Tel: 0101 508 744 0201. Fax: 0101 508 744 8041

IBM'S ACCOUNTS GET THE BLUES



• Please give generously, several million PCs to support. Troubled times at IBM

IBM, claiming to be suffering from sagging business, unfavourable exchange rates and a new accounting charge, has announced a first quarter net loss of $1,730 million, the first ever quarterly shortfall for the world's largest computer maker. The loss was due, company officials claim, due to a $2,260 million accounting charge against earnings to cover a new accounting standard that requires employers to cover non pension, post retirement benefits such as health insurance for current employees.

Without the charge, net income for the first quarter of the year would have been $532 million. In the first quarter of 1990, IBM earned $1,037 million. Big Blue officials announced plans to cut IBM's work force of about 373,000 by 14,000 in March.

'PHIBER OPTIK' SUPER HACKER PLEADS GUILTY

Mark Abene, known in hacker circles as 'phiber optik,' has pleaded guilty in a New York court to hacking specifically, a reduced charge of 'unauthorised use of a computer.' He has been sentenced to do 35 hours of community service.

Abene, who had his computer equipment and notes seized during the execution of a search warrant in January last year, was arrested in February this year and charged with felony counts of computer tampering and computer trespass and a misdemeanour count of theft of services. Originally, the charges laid against him could have put him away for up to ten years.

According to incredulous on-line reports in the United States, he now plans to donate his time to a local hospital and complete his 35 hours of community service. ■

FREE *1-2-3* ROM WITH POQET

While Poqet UK is selling its pocket computer for £995, the company's US operation is selling the machine for just $1,450, with street prices down to around the $1,000 mark at some places.

Now the US package is even better value because, until the end of June, Poqet is bundling a free copy of Lotus *1 2 3* v2.2 on ROM card free with the machine.

The Poqet PC is a 1lb portable personal notebook powered by two AA size alkaline batteries and has a suggested retail price of $1,450.

Data Pulse Hard Drives

Quantum Mechanics

The cached Quantum Mechanisms used in the Data-Pulse range of Hard Drives are made to very high American Military standard and are covered by a 2 year manufacturers warranty (from date of manufacture). They are all 3.5" mechanisms with a height of just 1 inch and integrated SCSI controllers. They have an average access time of 11ms utilising a 64K look ahead disk cache.

All Mechanisms used are Autoparking reducing the risk of damage during transit. They are also very low power which means they can operate without the need for a fan, thus reducing noise.

Data Pulse Hard Drives

The Data Pulse range of drives come in a variety of capacities and include the following.

- *Full Metal case providing good shielding and can be used as a monitor stand.*
- *On/Off switch and DMA device selector mounted on front.*
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Both boards have a data transfer rate in excess of 1Mb per second. Both come with formatting and partitioning software.

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52Mb 11ms (GE-Soft)	*£ 409.99*
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105Mb 11ms (ICD+clock)	*£ 539.99*

All prices include VAT & Delivery. Dealer enquiries welcome.

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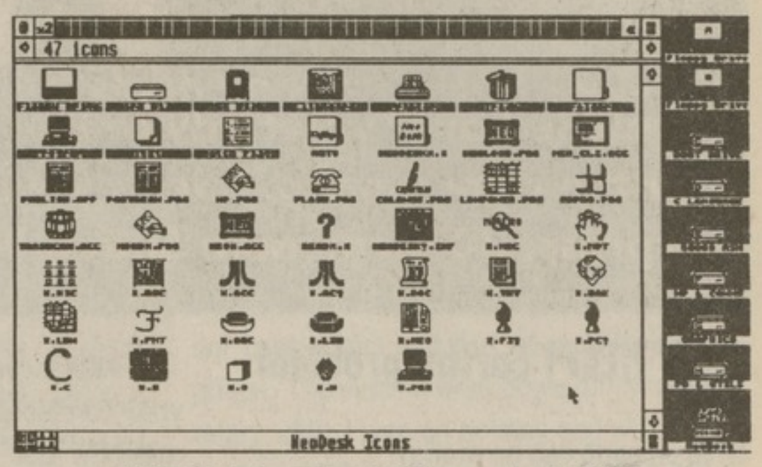

NEO Desk 3 Special Offer

Due to the popularity of our hard drives and bulk purchasing power, We can now offer NEO Desk 3, the replacement desktop which was voted "Software utility of the year" for 1990 by ST Format readers, to buyers of our hard drives for just an extra £24.99. We can also offer this perfect hard drive companion to all existing Ladbroke Computing Hard Drive owners (Phone for details).

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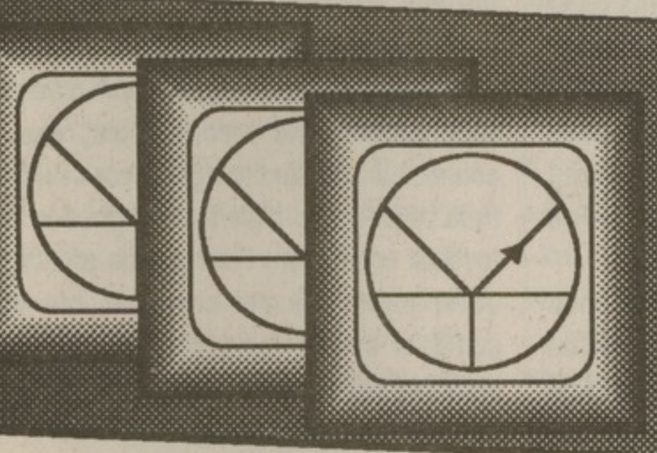
"Neodesk 3 is truly invaluable for the ST owner."
-ST Format-



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Aries Memory Upgrades

Ladbroke Computing have been active in the field of ST Memory upgrades for a number of years and can offer upgrade advice and solutions for the entire range of ST's. In that time our engineers have gained experience in the field and have used that experience to research and develop our own range of upgrade boards.

We have recently developed our own 2/4Mb upgrade board using an in house designed, Multi layer circuit board which measures just 52mm x 62mm, smaller than a credit card. We have achieved this miniturisation by utilising 4 Megabit memory chip technology. The result of this reduction in size is a reduction in cost and more reliable operation, due to the fact that the board resides under the ST's shielding protecting it from interference and reducing Electromagnetic emissions.

The board is manufactured in the U.K and hand assembled in our workshops by skilled technicians. The boards are then thoroughly tested before despatch.

The board comes in two configurations, 2Mb (upgradeable at a later date to 4Mb) and 4Mb.

The boards require some soldering but are very easy to fit and come complete with full instructions to fit ANY ST including Mega's(except STE's which use SIMM boards). If your shifter chip is socketed then you only have 17 connections to solder with a 4Mb board (14 with a 2Mb board). If your shifter chip is not socketed, you will have to desolder it and install a socket which is supplied.

To check your board has been installed correctly we supply you with a disk which has a memory check program and other PD utility software. If for any reason your upgrade should refuse to work we have skilled technicians on hand to offer technical support.

Aries Upgrades (Any ST(F)(M))

512K Upgrade Board	*£59.99*
2/2.5Mb Upgrade Board	*£139.99*
4Mb Upgrade Board	*£259.99*

Our skilled technicians can install the above upgrade boards for £20 including VAT and return delivery.

4 or 16 chip STF(M) only	*£39.99*

Aries Upgrades STE

512K SIMM's upgrade	*£24.99*
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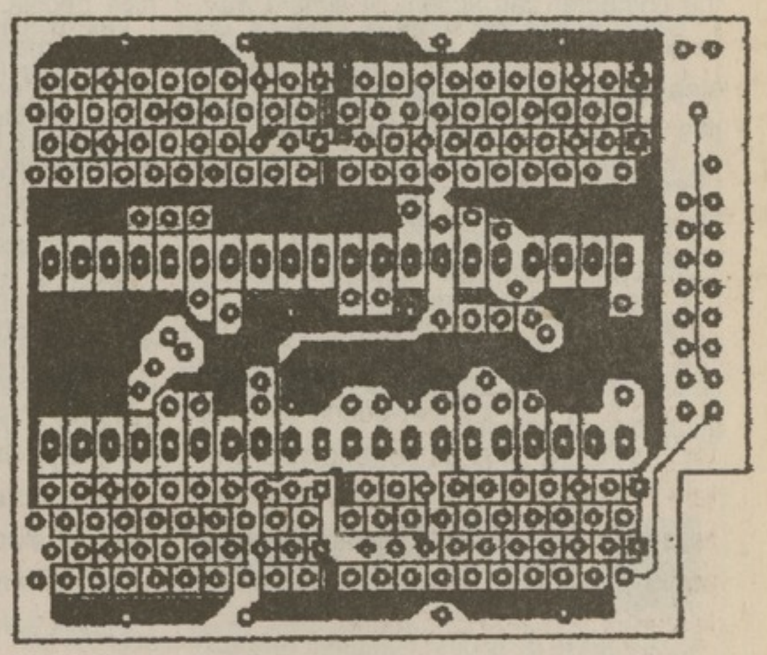
All the above prices include VAT. Delivery is free on orders over £100. Please check configuration of your machine with our staff before ordering chip or SIMM's upgrades.

Dealer Enquiries Welcome.



New 2Mb / 4Mb Upgrade board for Any ST.

(Shown actual size)

Aries Upgrades

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TECH TIPS

Confused over what advice you should listen to? Does your machine refuse to work? Looking for the right monitor? Send your stories and queries to Keith Pomfret, Tech Tips , New Computer Express, 30 Monmouth Street, Bath BA1 2BW.

HELP! Earthy problem

What on earth can be wrong?

I recently bought an STE and coupled it to a daisywheel QUEN-DATA typewriter used in computer mode (I had previously satisfactory run this as a printer with an old Sharpe M280A computer).

There is not much wrong as sometimes the daisy wheel will print out the full text of whatever the STE tells it, but more often than not it seems to have a mind of its own and print just part of it, refusing to print the rest and all stays frozen till the STE has completed 'transmitting' the document.

The printer just prints until some point at random is reached.

The intercorrection is not excessively long and I have connected into the printer as many incoming and outgoing signals as are available on the STE.. But what on earth can be wrong that it stops printing at random, usually before the end?
Richard Watkins, Shropshire

Sounds like a buffering problem. The STE could be sending more data than the computer can accept. A simple way to find out if this is the case is to beg, steal or borrow a printer buffer and put this in line. Typewriters that allow connection to computers often have little or no buffering. If you send a constant stream of data to a typewriter printer that has insufficient buffering and no 'intelligent' way of telling the computer to stop sending data, you will end up with a situation as you describe.

Alternatively, it may be that one of your connections is astray. If you intermittently get an acceptable result, it suggests that perhaps the typewriter isn't sending back a code to stop the data stream. This could be because a connection on the cable is intermittent, a connector is faulty, levels are incompatible or settings haven't been arranged for compatibility.

Check with the manufacturer of the typewriter on its compatibility with the STE or watch Circuit City for a bargain parallel printer at less than fifty pounds.

THANKS! For manual

I am writing to send you my address which you requested in reply to Charles Vickers letter offering a Spectrum 128K manual for my use. I am unable to send the money required for postage because I am unaware how much it would be.

Please could you thank Charles Vickers for the manual.
Dominic Morris, Worcs.

Proof positive that Tech Tips readers are nice people. Thanks to Charles Vickers for the manual and as soon as we've saved up for a first class stamp, we'll be sending the manual on its merry way.

● The Tech Tips library can benefit from any old and unused manuals that anyone has lying around the place. If you've an attic full of Oric books, a desk of Dragon manuals or any other books or manuals that you don't need any more, send them in and we'll save them for reference and for despatch to any reader needing them.

HELP! Sick Amiga

Could you please help me with a problem I have regarding my Amiga 500. Ever since I got it I have been unable to find a copy of *F29 Retaliator* to work on my machine, even though the shop has swapped it every version I get will run happily on my neighbour's Amiga which is the same version but won't run on mine. When I load it up my plane just blows up mid flight, and in the top left of the screen it prints ILLEGAL COPY (I assume the plane blowing up is part of the protection). I have had similar problems with *Galaxy force, TV Sports basketball, Rainbow islands* and find I can't load the installation program on Ant Heads.

I took my Amiga back to the shop stating my problem clearly only to find that they kept it for a week did nothing, and then claimed that the disk drive heads were dirty.

I then rang the Commodore value added care number where I talked to a confused person who thought the Amiga used tapes (messages to Commodore: If you are going to have a help line please use staff who know something about computers and who can actually help you).

Is there anything I can do? I have read that you can experience these problems if your disk drive heads are not aligned exactly. Is this my problem?

I would also like to comment on the PCW DTP debate. Surely any comments about the mono chrome display being useless if you get a colour printer also apply to the ST which can only cope with a mono hI-res and a four colour medium-res which isn't enough for colour printing. I could add here about how the Amiga can have 16 colours in medium and hi-res, but that would be going into the MCIBTYC.

On the topical subject of two fire button joysticks I thought I would say that when you flick your joystick to Sega Mode you can use the second fire button to activate one of the weapons on *Turrican* and *Star Ray* also supports the second fire button and also says how to convert your joystick to have two fire buttons.

The *Star Ray* manual says: two joystick buttons: the second (right) one is connected just like the right mouse button, thus between pin 8 (earth) and pin 9 of the joystick connector. For reasons of cost, a super joystick is not enclosed, but you could of course build yourself one and vaporise with it.
S. Oswin, Northants

Could be a disk drive problem. If your machine is in warranty, take it back to where you bought it, demonstrate the problem in the shop and demand repair, refund or replacement under the Sale of Goods act. We've found that the best time to get satisfaction from an exercise like this is when the shop is busy and full of potential Amiga buyers.

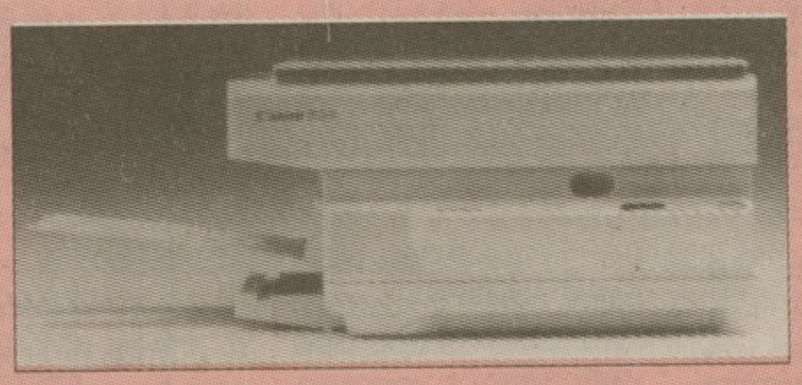
If you get no satisfactory result from this speak to your local Trading Standards Officer.

If your machine is out of warranty, a simple way to check if it is the disk drive or not is to have a competent computer repairer swap the disk drive for one out of another machine that you know will run the games. This only takes a few minutes and will tell you whether it is the drive or the machine. If it is the drive, get your 'expert' to take remedial action and check the alignment etc. If it isn't the drive, it's probably a matter requiring serious surgery.

HELP! Re-inking

Advice given in several computer magazines over the last couple of years about re-inking printer ribbons has been inconclusive. One magazine suggested endorsing ink, another preferred black silicon powder and Fairy Liquid. There have been correspondents who thought Indian ink or even fountain pen ink would do the trick. One person evensaid diluted laser or Photocopier toner would do the trick. Before I damage or destroy the print head of my Epson, can you give me the definitive answer.
Ross Tandy, Birmingham

Don't take any notice of any of the old printers tales you hear about re-inking. The ink on a printer ribbon contains pigment, fluid and a silicon lubricant. It is formulated to allow several thousand print head strokes per minute while transferring the right amount of ink to the paper and lubricating the print head.



• Old printers tales about re-inking your printer ribbon will end up damaging your machine.

You wouldn't use Fairy Liquid in the engine of your XR3i, so don't use it on a printer. The only way to re-ink ribbons (if you must!) is to either use a professional ribbon re-inking service or use a re-inking kit or fluid specifically designed for the job. Anything else will harm your printer and although it may not grind to a halt immediately, eventually the print head could be irrepairably damaged.

HELP! Questions

Nintendo and Sega games and graphics are dominating the corners of Dixons' shops and attract groups of children wide-eyed at the abundance of Mickey Mouse graphics. Ataris and Amigas seem to be under threat from these cartridge-loading games machines. But is it true that the

Amigas are due for a cartridge socket? Could you explain how and where this might be attached to the A500? Will it take over the A590 socket and make things awkward if you've got one?

I like the look of the very sensibly priced TriGem 88e reviewed recently. It seems to be on a level with my own Commodore PC-1, except that it is able to take a hard disk and has a few more ports. In terms of speed I don't think there is a noticeable difference and in screen display I tried out a PC1512 at the OU day School at Brighton Poly recently and it didn't impress. Hercules mono in amber is definitely the best, in my experience, for all text and programming work.

Finally, UCSD Pascal has a funny way of sending program output to the printer. As far as I know there is no equivalent of the Basic LPRINT and so after X(ecute) you have to type <filename> PO=PRINTER: and when the program runs and you have to type in reponses to prompts, it has to be done without seeing the text on the screen at all – like playing Blind Man's Buff in an empty room!

It is a painful experience glancing at what's appeared under the printhead and then very carefully typing in a reponse, letter by letter, like a three-year-old finding you've hit a wrong key when it prints out! It happened in the most recent assignment: and the result came out, "They went to sea in a sieve (yes they did!)". But with great concentration I then got "Prodigal Son (Luke 15:11-32)" completely right, though to see me doing it would have raised a laugh - a finger poised very carefully and deliberately over each key and saying it out loud character by character. Try turning out your monitor and typing a line in - I'm not joking, it'll give you a shock; you'll feel really deprived and cross after a while.

This seems to suggest that we all become pretty good touch typists eventually and the text on the screen really does get most of our attention - amazing since I for one never learnt how to touch type. How often do you look down at the keys?
John Grey, Eastbourne

Yes, the Amiga is due for a cartridge socket. No we don't know where it is going but the three logical places are 1 – the parallel port, 2 – the hard drive/expansion bus socket or 3 – the trapdoor. It could be made to work in any of those places .

The trapdoor looks like a non-starter as Commodore has taken to gluing it shut on upgraded A500s. The parallel port would do the job, but has some restrictions. The expansion bus sits next to the main processor on the board and is my bet as the place to attach cartridges. In real terms it could be done in an elegant way that wouldn't cause hassle with the hard drive. A small plug in expansion that sat between the A500 and the hard drive with a vertical port for inserting cartridges would probably do the trick. It could be made the same wedge shape as the Amiga and if lined up with an A500 and A590 hard drive wouldn't spoil the sexy lines of the machine.

That's all guesswork though and we'll have to see what Commodore decides. Thanks for your interesting comments on programming and printing.

HELP! Fast basic

I dabble in programming on my PC. I have to admit that I'm no expert and the some total of my knowledge is GW BASIC. The problem with BASIC is that although it can do a lot, it takes an age to complete the simplest routines. Over the last three years I have tried C, Pascal, and assembler. Whether I'm plain thick or whether you do need to be a special sort of person to program, I'm not sure. C and Pascal made sense in an obscure sort of way, but Assembler was gibberish. I'll never get the hang of all of those pnemonics.

Is there a way that I can take all of my finely tuned BASIC programs and make them faster without re-writing them into machine language? The programs are used at work and comprise a database, mini spreadsheet and invoice generator that shares data files with the database.

If someone knows of a programmer or company that could help me, I'd be willing to pay.
George Moss, Telford

If the programs are in daily use at work and you are able to invest a little cash to tune them up, you could contact a little company on the Isle of White that specialises in compiling GW Basic programs into code. This may prove a tad expensive if you want to do every ten line wonder that you've ever written. For the commercially viable ones, a price range that starts at £35, shouldn't break the bank. The company is Ginger Business Services on 0983 854576.

HELP! Lost number

We bought a computer from a company in Wales called Ricard. It is an XT clone with a hard drive and the £500+ that we paid for it was a fair price. When we bought it, someone at Ricard told us about engraving software that was available from them. We've lost their phone number, but need to get in touch. Directory enquiries can't help. Can you?
Marge Whittingham, Salford
I think that the company you bought your PC from is Racard not Ricard. They're the only people that I can find listed in Wales that do engraving software. They're in Castleton and their number is 0633 871388.

HELP! Mono monitor

My Amiga is used for word processing as well as games. The Excellence WP program is fine and the printed output to a Star LC10 is OK, but I find that looking at a colour monitor in the intense way that word processing demands gives me headaches. I am going to need a mono monitor but before I buy one, I want to know if a monitor from a closed circuit TV system will do. It is a Hitachi 14-inch black and white mono screen and was surplus to requirements when we installed a security net. It has a single screw type co-axial connector of the kind used on the antenna of radio transceivers. Will it work with the Amiga or will I need to buy the more common green or amber monitor?
Ruben Walsh, Hamilton

The CCTV monitor that you have should work as a text monitor for the Amiga although only testing it with your machine will confirm whether it has the necessary clarity for applications software. The cable between the monitor and the computer can be made using a phono plug for the Amiga end, an antenna plug for the monitor end and a piece of low loss co-axial cable between them. The mono composite port on the back of the Amiga provides the necessary signal for the mono display.

We tried four CCTV monitors on the office Amiga and while all produced a picture, the differences in display quality were great. Two were crisp and sharp, one was of TV-like quality and one was unsteady and fuzzy. The components to make the lead will only cost a few pounds and even if your monitor is unsuitable, the lead should be able to be modified for any proprietary monitor that you buy.

If your monitor works, make a note of the model number and let us know in case anyone else writes in about the same piece of kit.

HELP! Fax line

British Telecom was its normal unhelpful self when we asked for a dedicated fax line. "Yes, it'll cost an arm and a leg plus VAT," BT said "No, you mustn't take any notice of anyone who says that a fax will work on an ordinary line," they added.

I'm puzzled. When a local office supplier demonstrated a fax machine on a card in my PC, he used an existing phone-line that hadn't been supplied (at great cost) for fax use. The documents that he sent and received were clear and readable. He said that as we were on a digital exchange we didn't need a fax line. As there's a spare line anyway, is there any reason why we shouldn't use this for the PC fax instead of spending several hundred pounds at a time when the budget can't stand it.
Malcolm Stoneleigh, Wolverhampton.

The *Express* office fax is on an ordinary phone line and a straw poll of businesses that we have regular contact with confirmed that many firms don't bother with a dedicated fax line. Indeed, the voice fax switchers now on sale mean that a line can be automatically shared by voice and fax machines.

Whether Telecom has any small print that makes it a capital offence to put a fax on a voice line, I'm not sure, but the important thing to remember is, anything that you attach to the telephone network must have the little green BABT approval sticker on it. If it hasn't there's a goodly chance that you will be dragged screaming into court for an egress of funds from your wallet.

TIP! Moneysaver

Over three years I upgraded my ailing XT clone to a 286, added memory, added VGA colour changed to the nice resilient 3.5-inch disks and bought every new product that could help my office DTP. Scanners, printers, software, the list goes on and on.

Over £6,500 was spent on the system and there was still a wide gulch between our best output and that of a profesional printer. The system went down on my secretary while I was on holiday and she had to get a DTP bureau to do the job on our presentation.

In one tenth of the normal time, they turned out a job ten times as good for £150. We are selling all our DTP stuff and leaving DTP to the experts. £150 is less than one third of what the job would have cost us in labour and resources.
Will Blanchard, Edinburgh

HELP! CPC hard ones

There was a firm advertising a hard disk drive for an Amstrad CPC in the computer magazines. I have a 6128 (old style) and two external floppies

These are a 5.25-inch and 3.5-inch and both give me over 700K of storage (although to do this, I've had to disable the internal drive and connect the internal drive's lines to one of the external ones.

I've seen hard drives offered very cheaply at shows and fairs, but I've also read your advice about compatibility. Question: Can I simply adapt a hard disk bought cheaply at a show to work with a CPC. If I can't, is there any way of attaching more floppies to the CPC?
Jolyon Pettigrew, Burslem, Midlands

No, you can't simply weld a hard drive to a CPC. German company Vortex did it as has another German company recently. These are expensive beasts and although they work well, they are at best a compromise.

To add more drives to your CPC, you'll need to invoke some sort of switching. The main board of a CPC has only the logic for two drives and one silicon drive (RAM drive). In order to connect more drives, you need to have them physically switched so for instance you could have 4 (B) drives on a four way switch. You could only access one at a time but nonetheless, they'd be there. It's possible to make both drives switchable and at least one person has patched the Amstrad Amsdos-CP/M operating system and upside down Shugart interface to the Shugart interface of IBM high density 1.44Mb drives.

I'm sure a couple of 1.44Nb 3.5-inch floppies will give you a bit more kicking space than your existing ones.(and a damn sight more than the original single sided 178K drive.) ■

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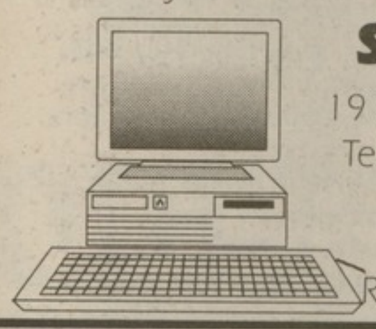

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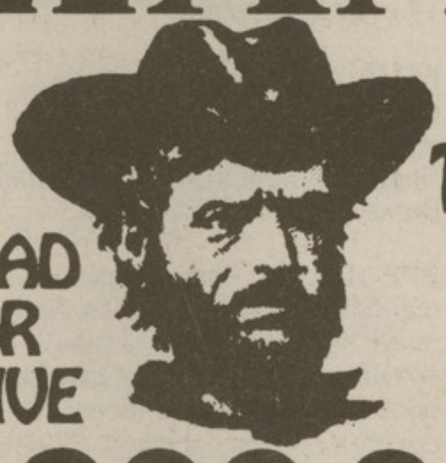

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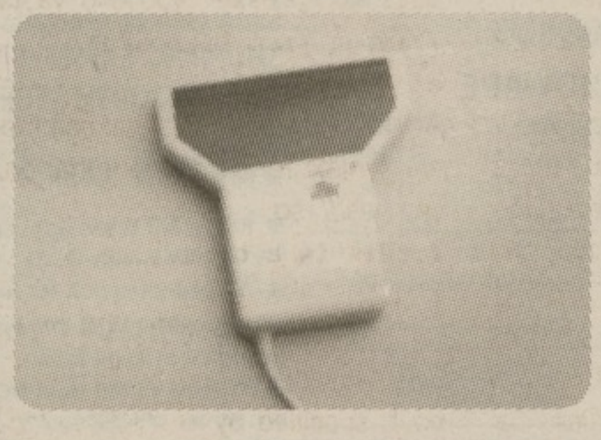

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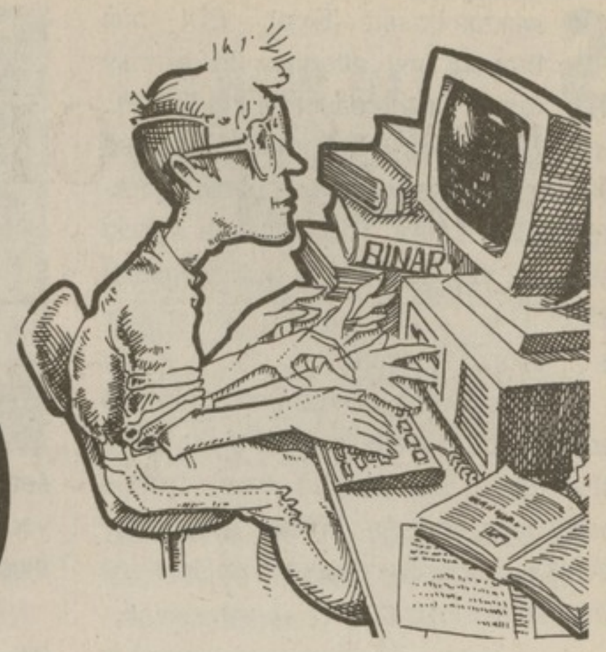
C++ FULLY FUNCTIONED



A second look at C++ shows how it uses functions as the basis of object-oriented programming. Mary Branscombe makes light work of functions.

It may not always be convenient to define a function the first time you call it. The code for the function may be in another file that will be linked during compilation, or you may prefer to define all your procedures at the end of the main program, in a logical order. If you declare a prototype of the function, you can define the function itself wherever you find most convenient. The prototype tells the compiler how many and the type of argument the function has, so that the compiler can check later if the functions that you are calling are defined correctly. Thus you do not need to define them at that point, as the information can be cross-checked.

Using function prototypes can help you make sure that you call functions with the correct number of arguments, a frequent cause of difficult-to-find bugs. If you are using function overloading, you need a prototype for each definition.

A function prototype is simply the function header followed by a semi-colon. You have to list the types of the arguments and you can include names for them if you find this helpful. So the function prototype for the function string() could look like:

```
void string(int, char);
or:
void string(int n, char ch);
Void means that the function does not return any value to the main program.
```

CHANGING THE ARGUMENT

Writing the function string as string() indicates rather different things in different versions of C and C++. In K&R C, the de facto standard that evolved before the ANSI standard, the empty brackets indicated that the function might return any number of arguments, but it was also used by some programmers to indicate that a function did not return any argument. To avoid confusion, in ANSI C this would be written string(void).

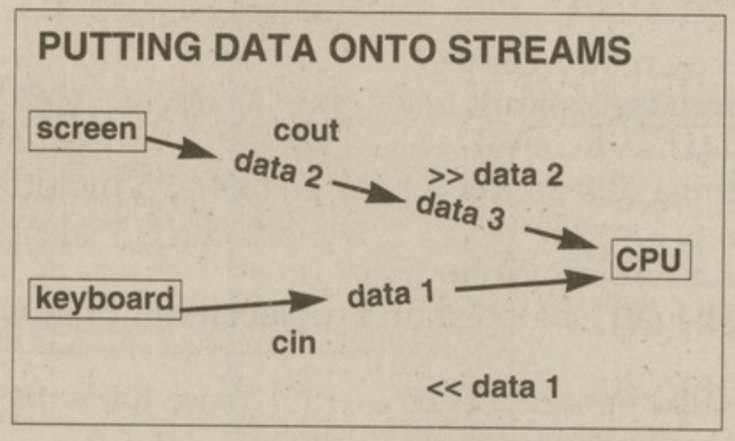
A function can take a fixed or variable number of parameters. In ANSI C, writing either string() or string(...) indicates that the function can take any number of arguments. In C++, string(void) and string(...) have the same meaning as in ANSI C, but string() once more means that the function takes no arguments.

	K&R	ANSI C	C++
()	any	any	none
(...)	illegal	any	any
(void)	illegal	none	none

If you often use one particular value when calling a function, you don't have to write it into the function but you can specify that value in the function declaration as a default argument. This means you can use another value when necessary. If you give another value to the argument when you call the function, that will override the default, but if you do not, the default will be used.

INHERITANCE

Rather than writing these functions separately in one area of the program and naming them, the functions that can use particular items of data are associated with the classes and objects that store that data. A function that is a member of a class is defined within the class and objects that are examples of that class inherit the functions defined in the base class. If a more specific class is needed, this can come from an existing class and can also inherit functions from its parent class.



If the accounts that customers can hold with a bank are defined in the hierarchy shown, then Account is the base class. Current-Account, Savings-Account, Tiered-Account and Combined-Account are all classes derived from Account and they inherit functions for updating the balance, making credits and debits and maintaining the account history from Account.

Inherited functions can be rewritten in the derived class if necessary. The Tiered-Account class will need a different way of updating the balance, because the interest rate depends on the previous balance. The Combined-Account class inherits functions from both the Savings-Account and the Current-Account classes: known as multiple inheritance.

One advantage of structuring data in this way is that it is easy to understand what each class represents. Classes are ideal if you want to define a component of a program and produce many copies of it. Also, each class represents a manageable chunk of code with a definite purpose. If you choose objects carefully, you can reuse them: a class of objects that writes text or graphics to the screen can be used in many programs. This modularity makes code easier to maintain. Another advantage is data hiding. Each class has an interface to other classes through its public data and functions, but data that is not to be used outside the class is kept private. Unless you change the interface to a class, you can rewrite the code inside that class without making changes elsewhere in the program.

This approach treats a class as a "black box". If you know what the class does, you do not need to know how it does it to use the class; you can give it parameters and ignore the implementation of the class. If you define these interfaces carefully, this makes it easier to split a program up between several programmers.

STREAMS

Input and output in C++ are handled by streams, a simple and powerful notion first used in Unix. Data is input onto a stream at some point, whether this is the keyboard or a file, and the stream carries the data until it reaches the output, which may be the screen or another file. Unless you specify otherwise and open a file, input is from the keyboard and output is to the screen. The input stream is cin and the output is cout. Other streams are available: cerr carries error codes.

Data is moved on and off a stream using the operators << and >> respectively. More than one item of data can be put onto a stream. For example, this code outputs a message and collects two inputs:

```
/*declare variables*/
int i, j;
/*message to screen*/
cout << "please type two values:";
/*input from keyboard*/
cin >> i >> j;
```

Another new feature is that comments can have a different syntax: for a comment that only lasts one line, you can use //, so

```
//this is a comment.
```

NATIVE CODE

C++ was developed by Bjorne Stroustrup and it has been specified by an ANSI standard. Because C++ is an extension of C, the first implementation, Cfront, was built on top of an existing C compiler: the Cfront compiler took in C++ source code and produced C source code, which was then compiled by the C compiler. This two stage process is used by any implementation of the language which is based on Cfront.

New compilers, like those from Borland and Zortech, take C++ code and compile this into the machine code instructions native to the machine you are using. This is known as native code compilers. ■

WATCH YOUR LANGUAGE

- **You can tell the C++ compiler about a function with a prototype and define it fully elsewhere.**
- **Classes and objects can inherit function definitions.**
- **Putting all the code connected with one sort of data in one place helps to organise your program.**

C++ was developed in the early 80's and because it is such a modern language, the environments provided with implementations tend to be excellent, giving you editors, debuggers and other tools, including extensive libraries. Borland C++ for Windows, for example, provides class libraries that do much of the work of writing a Windows application.

THE PD COLUMN

International millionaire playboy and PD explorer Frank O'Connor brings you the latest and greatest from the Public Domain.

Swindon-based Eigen PD, has brought my attention to a truly remarkable product for the IBM PC and compatibles. The product is called Tex, and comes with a companion package called Latex. This package should help you to produce high quality typeset documents to an almost unbelievably professional standard.

The software can be used to create anything from a single page mono pamphlet, to a fully fledged novel. Indeed publishers Addison, Wesley and Wiley (AW&W) actually accept Tex files as finished manuscripts.

That such an incredibly professional package can be yours for the price of disks and postage is remarkable ...

The results are very slick and very polished; AW & W's Tex -produced catalogue being a perfect example. The range of features available are incredible, and the system can be upgraded as and when you wish.

A fully comprehensive package will cost you around 10Mb in hard disk space, but for this costly memory greed, you will have over 700 different font files, these alone taking up 5Mb.

The suite of programs is very flexible, and is limited only by your ability and understanding of an admittedly complex system. The documents are created by inputting a sequence of commands while you type.

The system could be likened to a kind of primitive BASIC, but is much easier to get to grips with. For example, to centre the title 'Grapes of Wrath', the necessary command would look this:

```
/title (Grapes of Wrath)
/maketitle
```

And there you have it, a fully centred title, and the logical start to your document. The results are very clear, and once mastered, the control method is simple and logical.

The program is constantly updated, and has so many configurations. Mathematicians will find themselves especially well catered for, with an enormous array of math specific characters and functions. Perhaps the most impressive thing about Tex, is the fact that the whole package, with add-on files and text fonts is entirely public domain, not even shareware.

That such an incredibly professional package can be yours for the price of disks and postage is remarkable enough, but the results gained from the package itself make the thing look like a top-end program. At the very least it could be used as a low end word processor, and at most as an incredibly flexible document handling system. This program, or rather suite of programs, is an essential addition to any PC owner's collection. Sadly however, only hard disk owners will benefit from the full features of the program, unless you feel like swapping upwards of 10Mb of floppy disks. Still, less highly configured versions of the Tex can be ordered. And at

Maths

The copyright of TEX belongs with the American Mathematical Society, so you won't b to find that TEX's maths handling abilities are exceptional. For example —

$$\prod_{j\geq 0}\left(\sum_{k\geq 0} a_{jk}z^k\right) = \sum_{n\geq 0} z^n \left(\sum_{\substack{k_0,k_1,\ldots\geq 0 \\ k_0+k_1+\cdots=n}} a_{0k_0}a_{1k_1}\cdots\right).$$

and Poisson's integral is a breeze —

$$U(r,\theta) = \int_0^{2\pi} \frac{U(\phi)(a^2-r^2)}{a^2-2ar\cos(\theta-\phi)+r^2}\,d\phi$$

• The marvellous mathematical meanderings of PD's latest star – that's Tex to you.

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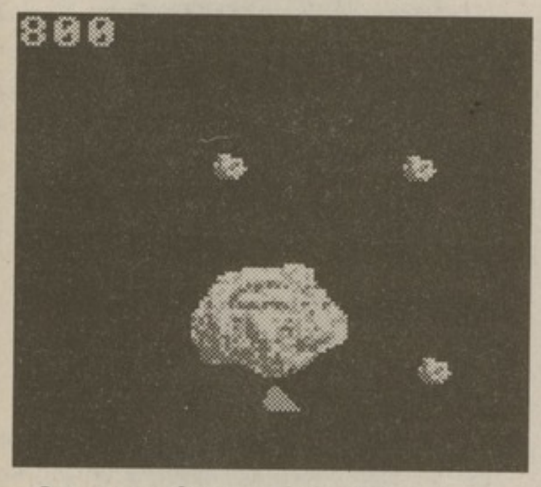


• *Get your rocks on with* The Disk.

Amiga owners looking for a novel approach to the PD scene could do no better than to check out *The Disk*, is, not unsurprisingly, a 3.5-inch disk-based magazine put together by the inestimable Steven Lord of Hebden Bridge, West Yorks.

The Disk comes with several very interesting and rather well written articles on various Amiga topics, and would be worth buying for those alone.

However, also included on the disk is a range of utilities and demos, including the usual music stuff and yet another virus killer.

One of the more useful features of *The Disk* is a utility called *Power Packer*. This program allows you take take a very big, memory intensive program, and stuff it, cram it, squeeze it into a tiny little space on a disk. It's best feature is that it is very simple to operate. Also included on the disk is a neat, fast and very difficult *Asteroids* clone, a nice bit of nostalgia and a good laugh.

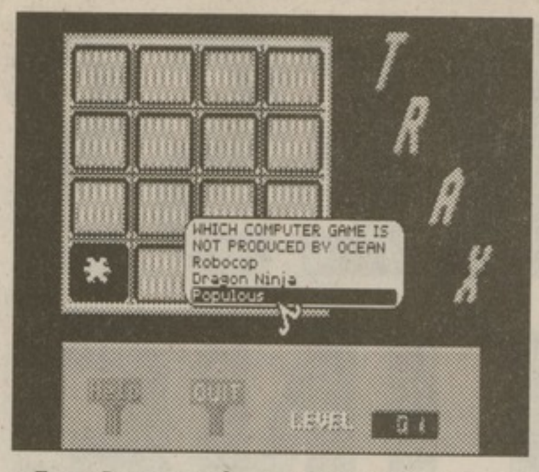
On a more serious, but not that serious , is a printer driver called *Purty*. This odd title is an extension of the term PRT. PRT is a printer standard which can be used with some difficulty to drive printers from an Amiga.

Purty makes the whole process easy and pleasant. The program is run with the use of a few simple icon driven commands; fast and very useful.

The Disk is an informative and entertaining read, and it's bi-monthly. A worthy purchase for any Amiga owner on the look out for new software and ideas.

ST SWAG FROM PARADISE

A lot of of neat utilities arrived this week from stalwart PD company Paradise Computers. In its most recent update to a burgeoning list, a few gems really stood out. One of these shining examples of PD software is *Monochrome*, this is a cut down mono version of the classic Atari art package *Neochrome*. Obviously all of the colour handling features are gone, but most of the other graphic handling is preserved. The colours have been replaced with grey shades, and some very nice results can be produced.



• *Trax: Dare you play in a standard bog?*

Also included is a nice graphic map of space. This only runs on mono STs, but it gives a nice and indeed useful guide to the surrounding cosmos.

A couple of games popped up too, including *Trax* and *A Winter's Tale-Dizzy 2*. *Trax* is a bog standard, but fun quiz game from which limited enjoyment can be gleaned. *Winter's Tale* is the sequel to *Dizzy*, the *Boulderdash* clone we reviewed a couple of issues back. The gameplay is almost identical, more jewel gathering malarky, only this time the graphics and sound are improved a little. The screen layouts are different and if anything a little more difficult.

The object of the game, for those of you who haven't heard of *Boulderdash* (where have you been?), is to collect diamonds in a subterranean cavern. Rockfalls can kill you, but can also be used to positive effect and the whole thing is good wholesome fun, with a couple of nasty surprises. The snowy graphics add to the whole thing, and like they say, it's just a larf innit? ■

HOW TO GET YOUR HANDS ON THE GOODIES

EIGEN PD supply a very large range of Public Domain and User-Supported software and can be contacted at; Eigen PD Software, PO Box 722, Swindon, SN2 6YB, Tel. 0793 611270

THE AMIGA DISK magazine from Steven Lord can be obtained from the following address: Steven Lord, 6 Stubbing Brink, Hebden Bridge, W. Yorkshire, HX7 6LR, Tel. 0422 844215

PARADISE COMPUTERS supply a very comprehensive range of just about everything for the Atari ST, and can be contacted at: Paradise Computers, 9 Westfield Crescent, Brighton, East Sussex, BN1 8JB

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Note! Release date for this exceptional program is May 1st. It will NOT be on sale before this date.

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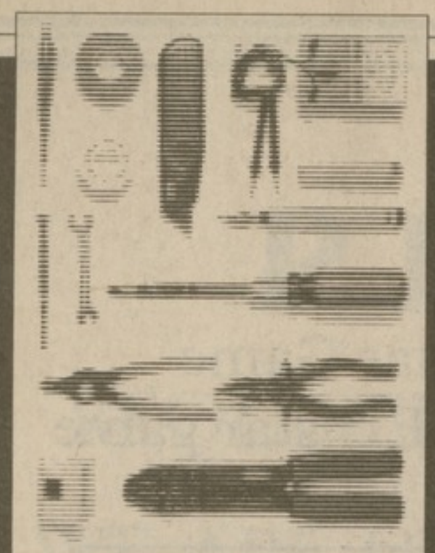
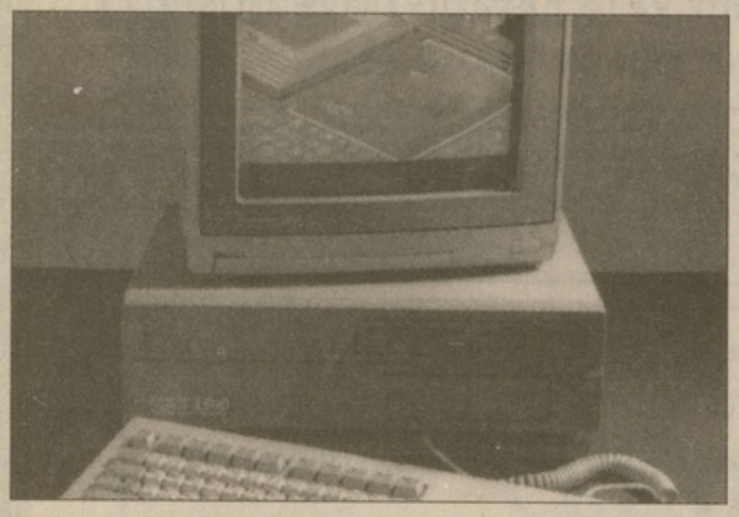


CIRCUIT CITY

You've found a bargain piece of kit, but can't figure out how to use it with your system? Keith Pomfret looks at how to add cheap surplus IBM drives to an Amiga and keep your peripheral purchase prices as low as possible.

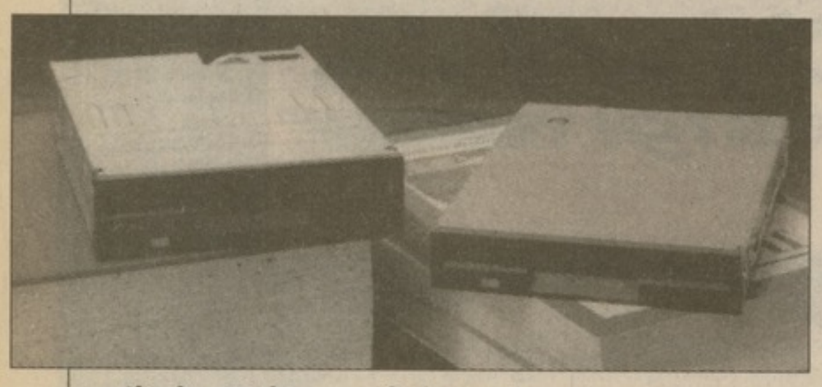


• The 1500 has ta couple of 3.5-inch floppies, but there's room for a 5.25-inch drive.

About 50 per cent of the mail that arrives on the Circuit City and Tech Tips bench is to do with old machines and bargains. Readers want to rip the re-usable bits from their dormant machines and give them a second life in an Amiga or ST.

We also get many letters from readers who have picked up a really cheap piece of kit. Your new hardware may look like a bargain, but until you've figured out how to connect it, it's scrap metal. We looked at some ways to add surplus IBM drives to an Amiga and how to power them.

DISK DRIVES



• Slim line PC drives can find a new home in your Amiga.

The 3.5-inch disk drives from an IBM PC or clone are an attractive proposition to an Amiga owner. Proper Amiga disk drives can cost anything between around £60 and £120. With bare PC drives selling as cheaply as £15 at radio rallies, computer fairs and in the small ads, they seem like a bargain not to be missed.

The de facto standard for PC disk drives is becoming the 3.5-inch 1.44Mb high density disk. This means that all of the 720K PC drives are fast becoming defunct in PCs before their robust mechanisms have worn out.

So if all disk drives are created equal, it should be a simple matter of inserting the PC drive on to the external drive connector of the Amiga. Unfortunately, all drives aren't created equal. The PC uses the slightly universal Shugart standard while the Amiga uses a standard of its own.

If you buy a PC 3.5-inch drive for £15, the chances are that it will be a bare drive removed from the PC's case. Unless you've a B2000 or a 1500 or some other beast with room to add internal drives, you'll need to case it. If you're using several peripherals and other power gobbling devices, your basic A500 won't be able to supply enough power for an extra drive so you may need either a more powerful power supply for the A500 or an internal power supply for the disk drive. once you've sorted that problem out, the Amiga/Shugart interface is your next problem. In order to persuade the Amiga hybrid Disk Operating System and Disk interface to work together, serious surgery is called for.

The simplest way to mate an Amiga with a PC drive is to build your own interface. There are several 'best ways' of doing this floating around in the public domain, so we took one that almost worked and asked Amiga technical supremo Paul Simpson (Simpson Electronics) to look over some of the attempts and produce a working version that could be easily assembled.

EASY TO WORK INTERFACE

Paul's Amiga PC/Drive interface is a re-work of earlier interfaces using components that are easy to source. A piece of stripboard was chosen as the simplest soldering media and the components list was a couple of logic chips, some wire and seven resistors.

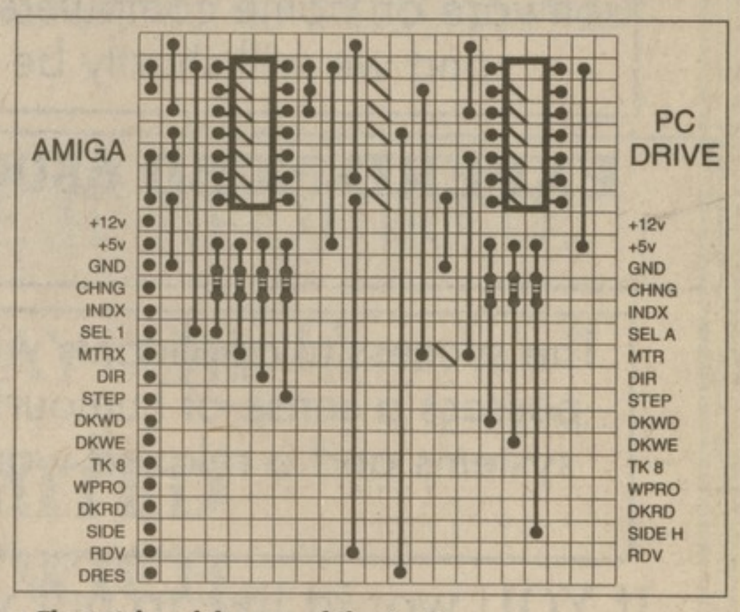
A ring round a few electronic suppliers confirmed that the bits are indeed easy to source. Everywhere that we tried sold stripboard.The 74SL00 and 74L374 logic chips were priced between 75p and £1.50 depending on where you get them and the resistors were a common off-the-shelf article.

The diagram of the interface is for reference only and before you decide to build this interface, you should be aware of the following: the boxes with a single diagonal slash in them (/) are an indication of the position where the track on the stripboard must be cut. The strips run horizontally (that is left to right on the page). It's important to cut in the right places as the point of cutting tracks on stripboard is to be able to use the same track more than once.

A simple way to break the tracks is with a drill. Choose a bit that is slightly wider than the track to be cut, but not wide enough to cut other tracks. By gently 'drilling' the strip, you can break the tracks.

While we have made every effort to draw the inerface diagram as an accurate representation, we suggest that anyone wanting to build the interface contacts Paul Simpson for advice on the project. Paul can supply the parts and the know how to help you build the interface. Alternatives if you want to go ahead yourself without the recommended help, suppliers are Maplin or High Street store Tandy. Both should be able to supply the necessary bits and pieces.

As far as assembling the drive interface goes, it's not a difficult job. The two chips can be a bit fiddly because their legs are close together and if you're not capable and careful with the solder you could get a live short. As well as that, chips don't like to be cooked so it's maybe a good idea to solder a pair of sockets to the stripboard and then place the chips into them. This gets rid of the danger of frying your chips (groan).



• The stripboard diagram of the circuit.

The Amiga side of the interface can be connected to multicore cable which in turn is connected to the Amiga drive connector. The PC side of the interface can be connected to the Shugart interface of the drive by whatever generic connector the drive has. If you're planning to use the Amiga power supply from the drive interface, you'll wire as appropriate.according to the diagram and the Amiga pin connections.

POWER UP

A dedicated power supply to add power for extra drives on your Amiga can be done one of two ways. Either a hunky external power supply for the Amiga that plugs into the Amiga's power supply connector or a drive only power supply that powers the drives direct. The more elegant way that needs less sockets is a replacement for the Amiga power supply. This may be a bigger job and cost more, but it will be more satisfactory.

The Commodore power supply offers a somewhat parsimonious 5v at two and a half amps and 12v at one amp so anything that greatly improves on this figure will do the biz.There's also a -12v line at 0.1 amps so make sure that any power supply you intend to use has this to. The connector from the Commodore power supply to the A500 is difficult to get so you'll probably have to utilise the one from your existing power supply.

If you decide to use a separate power supply for the drives, you'll need to connect it as specified in the diagram. If you buy a second-hand power supply, don't believe everything that you read on the label. Check that the power supply is giving the right voltages before you bolt it on to your expensive kit. A good multimeter will help you with this check. ■

SAFETY AND SECURITY

If you open up any kit that is still in warranty, your warranty is lost. If you open up anything using mains voltage you could kill yourself.

If you open up a power supply and kill yourself, don't come running to us for compensation. Electricity is very dangerous. If you don't know what you are doing you will end up fried. You are warned...

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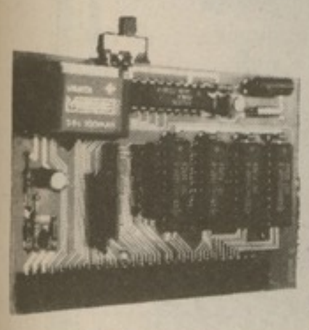

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N.B. Due to the large variance in design of the Atari ST, there is a small minority of boards in existence which may require a little soldering.

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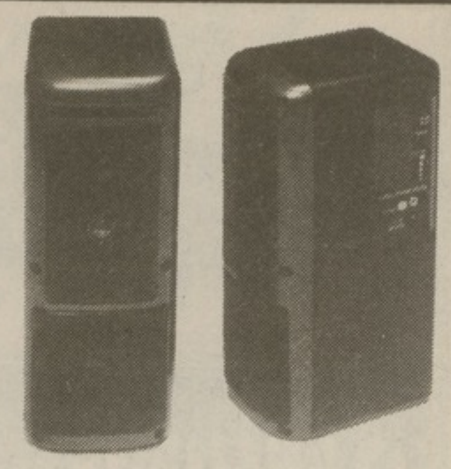

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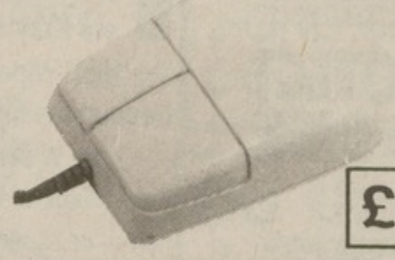

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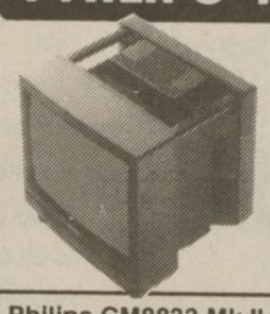

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SOONTOFOLD

OPENING TIME

Crime. Together we can avoid getting involved with it if we all look the other way as often as possible. That's what seems to be the trouble with this country doesn't it eh readers?

Look at that Mad Hacker character. In any reasonable country, like Turkey or Algeria, he would have had all his limbs chopped off and fed to the palace guards! I'm not suggesting that he is in anyway responsible or guilty but face it readers, justice is out of kilter innit?

HOW TO PROTECT YOUR HARD DISK

Don't you be caught out when people wearing strange trousers and T-shirts come round to your house offering to add memory to your hard disk. Follow these simple rules to stay safe!

1) Avoid placing your disk anywhere near large industrial magnets such as those used in car wrecking plants.

2) Don't let small children with dentists tweezers fiddle around inside your hard disk at any time no matter how much they whine. (Lock them in the coal shed that's what we say!)

3) Lock it in the bank of England when it's not in use.

Winchesters wiped with wicked wantoness

MICRO MANIAC STALKS UK

• Mick Filth: the 'Hard Wiper' or merely a village postie?

In a crime wave which would have awed Bonnie and Clyde or the brothers Kray, a crazed data killer called the 'Hard Wiper' has been spreading terror through the nation.

The WIper was first spotted in the quaint Kent village of Stockley-Carmichael using the name, or psuedo-name, Postman Matt. Local greengrocer and village bigot, Mr Ron Hangingstoogoodforthem picks up the story:

"Matt was Okay by me, a little crazy at times, espcially when he managed to get to Deadly status in *Elite* on his BBC Master. I think it turned his head. But, aside from spitting at the tourists and driving a foreign car, he was an all right bloke".

Another side of the tawdry tale comes from Mrs Hilda Dunnby of sleepy Hertfordshire hamlet Ickleford (home of John Kettley and that woman who sings). In a state of emotional flux, she made the following statement to Soontofold investigators: "This man, who I have never seen before in my life honest guv, knocked on my door one morning, he was wearing GPO issue trousers and an 'I've Been to the All Formats Fair' T-shirt. He asked me whether I'd like a few extra megs on my PCW's hard disk for the price of a large gin. Of course I said yes. After fifteen minutes he emerged from the study, giggling to himself and farting uncontrolably. He took the money and ran. It was only two days later when I had managed to scroll a page in LocoScript 1 that I realised. I had my hard disk wiped clean. It was a shocker".

• Mrs H Dunnby of Ickleford, Herts

"I had my hard disk wiped clean. It was a shocker!"

We managed to track down the Hard Wiper to the bustling little Hampshire village of Shawford. We knew we had our man by the trousers due to description furnished by Mrs Dunnby. We asked the following relevant questions of the man we thought to be The Hard Wiper:

⁕ What had become of all the data?
⁕ Where was he going to strike next?
⁕ Did he have an accomplice?
⁕ Just who the heck did he think he was?

His responses were telling to the trained ears of our team. He said: "I'm Mick Filth, an innocent postie. I don't have a computer, I've got an Einstein. You must have mistaken me for Jim McCrack of smokey northern village Fettle-on-the-Chip which is situated in dark satanic West Yorksheeer".

```
C: DIR C:

C: Nothing here at all mate. It's
totally clean. I bet you're gutted
eh? There's not one jot of data left
on drive C: at all. You've lost the
lot and no mistake. Sorry about that
but if you're going to let strange
men play with your drives you're ask-
ing for it.

C: DIR C:

C: Clean as a whistle.
```

• What was left of a disk after an attack.

THE PLOT THICKENS

That was our next port of call. After sending in expense sheets and filing copy, the team headed north. We had a description of McCrack. He was a small man of six feet, shifty eyes, and grey to red hair. He was working as a computer data entry operative for two weeks, in which time 14,000 hard disks had been wiped in the area. Everything was going our way until we were told by friendly village undertaker, Phil Hole that McCrack was in fact dead!

Read next week's issue for the denoument.

• Jim McCrack: Innocent bystander or evil genius out to revenge himself on the world?

"Brat is as innovative and addictive a puzzle game as you're likely to see"- The one 93%

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255 Flaschbier
856 Xenon 3 etc.
117 Moria RPG
154 Track Record 1 meg
534 Games disk 1
1179 Chess etc.
1184 Mastermind etc.

UTILITIES

659 Essential Utils. 1
1206 Mandlebrot Maker
1208 Database Wizard
1078 Essential Utils. 2
1099 Pro Tracker 1.1
1202 RSI Demo Maker
1146 Icon Magic
1151 C-Light
1156 Driver Generator
1368 Speccy Emulator
1310 MVK 2.1

MUSIC

1320 Slabys Music
1317 "19"
1308 Vogue Music Comp.
1303 Imagination
1322 Flashing Bytes
1319 Original Rips 3
1323 Matrix Music 3
1324 Blood Suckers
1327 Triumph Music 11
1333 Amigadeus
1334 The Beatles Hits
1338 Turn Up The Bass
1347 Classix 2
1353 The Best of RAF
1348 Hot Wired
1217 Equamania 2
1181 True Energy

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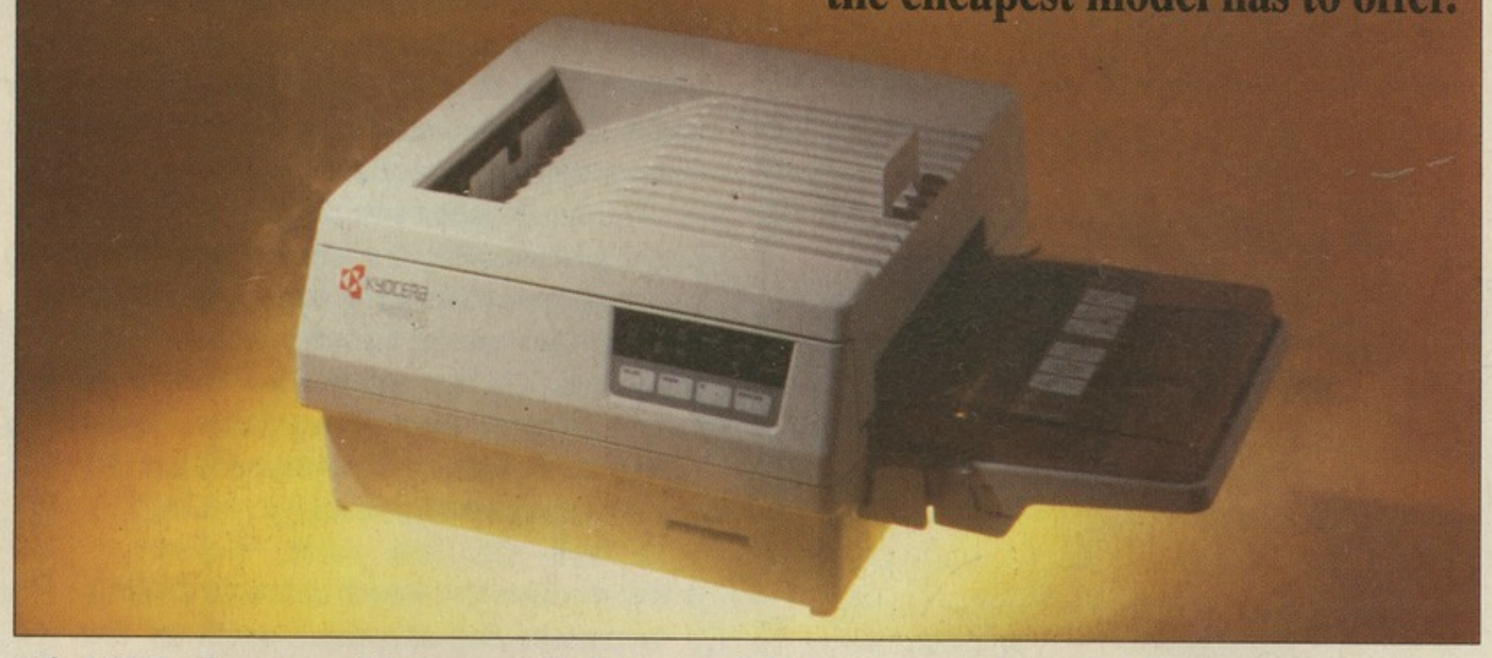
ON THE FONTLINE

Kyocera's range of laser printers emulate not one, not two, but seven major printer formats. Dave Golder looks at what the cheapest model has to offer.



• The F-800T offers a range of fonts you would only expect to find on printers costing hundreds of pounds more.

Compact, light and brimming over with fonts, Kyocera's F-800T is an extremely impressive machine for an entry level laser printer offering double the amount of typefaces you would normally expect to find on any comparable machine.

Weighing in at 1.7kg, the F800T has a reasonably small footprint area and would suit a small and busy office where space is scarce. While it is not exactly portable, neither is it one of those monsters under which all the biros become irrevocably lost because no-one can be bothered to move it.

In terms of speed and print quality the F-800T offers good, if not outstanding, service. It prints at eight pages a minute at 300 dots per inch, both of which are fairly average. However, where it does score is in terms of its versatility and compatibility. It can emulate seven different types of printer and is compatible with most of the popular word processing packages, but it is not PostScript compatible.

To be able to emulate all these formats it has an incredible 79 different fonts resident in its memory, an remarkable amount for a printer which retails for less than £1,500. Comparable machines price-wise will usually offer between 5 to 35 fonts.

The F-800T has six standard font families along with all their variations, such as bold and italics. Some major international characters sets are also included in certain emulation modes, including Danish, French German. This means you can print characters such as ä, é and ø.

QUIET QUALITY

Laser printers have two main advantages: the print standard is of high quality and they operate extremely quietly. A laser printer stores the document data it receives from the computer as a bit mapped image,that is, it decides whether a certain point on the page should be left white or printed black. A good quality laser printer, of which the F-800T is an example, will break down each square inch into 90,000 of these points and this will be expressed as 300 dots per inch (dpi). Laser beams then draw this image onto electrically charged toner particles on the printer's drum. The drum then rolls over a charged sheet of paper onto which the particles are attracted.

All this is much quieter than a clattering print head, and indeed the F-800T operates at very low 52 decibels, which is only slightly louder than the hum of a fridge. This is very useful in a busy office where a noisy printer would soon drive everybody mad.

DESIGN YOUR OWN

It also offers three fonts which the company terms 'dynamic outline fonts'. These let you design your own typestyles using the range's own printer command language, Prescribe. From your computer you can take one of these fonts and compress, stretch, reduce or enlarge it. It's a pity that you cannot do much more than this and create some really outlandish typefaces, but it is quite useful for more formal posters and document headings.

Another useful feature of the F-800T is that it can print out bar codes. It offers 39 bar code formats as standard and using Prescribe they can be doctored to suit individual needs.

Where the F-800T does score is in its versatility and compatibility.

One feature of the whole Kyocera range of printers is the IC cards for storing documents, graphics and logos. These are credit card-sized slices of plastic which slot into the printers and save the need for complex downloading from the computer. A nifty idea, but with two drawbacks. First, the cards stick rather a long way out of the printer when in use and can be easily knocked about. The major problem, though, is the price – the IC card Reader Writer kit costs a further £236 with individual cards costing £36 each. Perhaps it would be better to endure complex downloading.

The printer can handle paper, labels, overhead projector sheets and envelopes, but unfortunately cannot handle anything over A4 size or continuous stationery which is a bit limiting. However, the paper feed tray can take up to 150 sheets at a time. The company reckons the toner should last 4,000 sheets, which means that you should not be changing cassettes every few days.

COMMON FAULTS

The main drawbacks of the F-800T are ones you will encounter with most low end printers. It is not supplied with sufficient RAM as standard; 512K just about copes with plain text documents, but once graphics of any kind are added you soon run out of memory, so you will probably find that you will have to buy a RAM expansion. Also, no printer cable is supplied, which is very annoying, and means that if you (reasonably) assumed that there would be one included, then you will not be able to set it up straight away.

At £1,350 the F-800T is incredible value considering the amount of fonts and features it offers. In terms of non-PostScript compatible printers it is definitely one of the most competitively priced laser printers around. Kyocera can be contacted on 0734 311500. ■

EMULATION AND COMPATIBILITY

The F-8000T can act as any of the following:

- HP LaserJet Series II
- IBM ProPrinter
- Diablo 630
- Qume Sprint II
- NEC Spinwriter
- Epson FX80
- Line printer

This means that word processing and graphics software compatible with any of these printers, such as *Lotus*, *MS-Word* and *Wordperfect*, will also work with the F-800T so long as it has been set to the correct printer emulation for the word processor you are using.

However, there are some differences in the F-800T's emulations. It cannot print on paper larger than its A4 cassette, so continuous stationery and wide forms are ruled out. Also, proportionately spaced text which has been right justified on the word processor, might not have a straight edge on the print-out. Some fonts are not duplicated exactly, but in the case of dot-matrixed fonts, the laser printer emulation can be preferable.

THE VERDICT

FOR

- ▲ Impressive range of emulation with 79 resident fonts
- ▲ Compact and light
- ▲ Easy to use
- ▲ 39 built-in bar code formats
- ▲ Very good value for money

AGAINST

- ▼ Supplied RAM is rather small and restricts printing
- ▼ No printer cable supplied
- ▼ Will not print anything over A4 size

CHART CHAT

With the Bitmap Brothers' Speedball about to hit the Sega Master System (and re-entering the charts in budget form), comes news that its sequel (currently at Number 5 on 16-bit) is in production for the Sega MegaDrive. A release date has yet to be set.

TOP 10
SIXTEEN-BIT GAMES

THIS WEEK	LAST WEEK	TITLE	PUBLISHER	MACHINE
1	7	*Lemmings*	Psygnosis	ST AG
2	2	*Fantasy World Dizzy*	Codemasters	ST AG
3	1	*Final Whistle*	Anco	ST AG
4	10	*Power Up*	Ocean	ST AG
5	6	*Speedball 2*	Mirrorsoft	ST AG
6	8	*Operation Wolf*	Hit Squad	ST AG
7	5	*PGA Tour Golf*	Electronic Arts	AG PC OT
8	RE	*Steve Davis Snooker*	CDS	ST AG
9	4	*Viz*	Virgin	ST AG
10	RE	*Speedball*	Mirror Image	ST AG PC

ST = Atari ST AG = Commodore Amiga PC = IBM PC or compatible OT = Other
Chart compiled by Gallup. © European Leisure Software Publishers Association.

GAMES WEEK

If it's the latest reviews, the hottest news and the most essential tips you're after then Gary Penn is the man with all the answers.

Arc Developments' shoot-'em-up ***Restrictor*** is nearing completion having been in development on and off for the past year or so. Published by Thalamus, ***Restrictor*** employs a sprite-based (as opposed to polygon-based) three-dimensional viewpoint similar in style to, say, Sega's coin-operated ***Galaxy Force***. Well, almost. ***Restrictor***'s due for release this Summer on the Amiga and Atari ST.

The Arc Developments chaps have a second project in production for Thalamus, a conversion of the cracking Commodore 64 shoot-'em-up ***Armalyte***. Not only is Arc updating the way this blaster looks and sounds, it is also adding a few ideas of its own, including full-screen animated scene-setting sequences. ***Armalyte*** on the Amiga and Atari ST is due for release this Summer.

● With the news that French developer Delphine is to produce the adventure version of ***The Godfather*** for US Gold comes the announcement that Delphine's latest Cinematique adventure ***Cruise For A Corpse*** is at last nearing completion. ***Cruise***'s content differs greatly from the more traditional adventure puzzle storylines of its predecessors (***Future Wars*** – a sequel to which is currently being put together – and ***Operation Stealth***) taking the form of a murder mystery set on a liner with many possible endings. Owners of Atari STs, Amigas and IBM PCs and compatibles will be able to solve the crime this May.

● Following weeks of speculation, Mirrorsoft has confirmed that it has secured the licence to bring ***Aliens III*** to the home computer systems. In contrast to its predecessors, ***Aliens III*** won't feature any futuristic hardware.

PLAYING TIPS

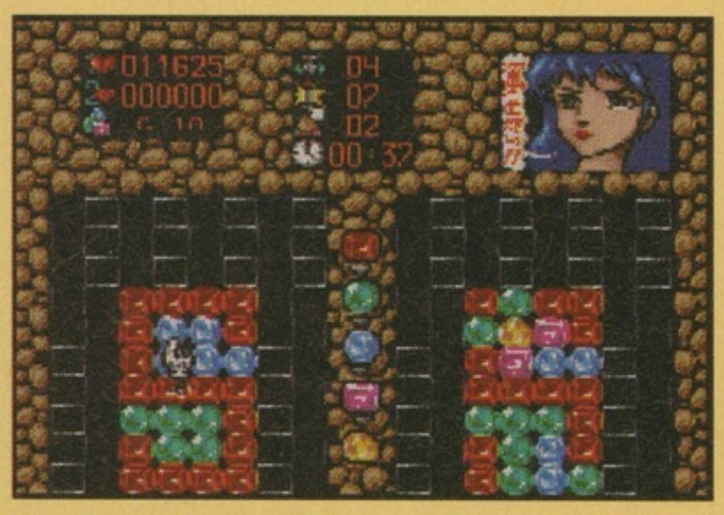
CRACK DOWN
US Gold

ATARI ST Press the 'P' key to pause the action. Now type REVENGE OF THE MENTAL MOONMEN. (That includes the spaces AND the full stop!) The border should change colour to indicate that the cheat mode is active – almost. What you have to do now is press the '1' key (NOT on the keypad) to initiate an unlimited supply of lives when you 'unpause'. Repeat the above performance but press the '2' key for unlimited ammunition when play is resumed.

GAMES REVIEW

GEM'X
Demonware

Amiga & Atari ST £25.53 IBM PC & compatibles £30.64
Commodore 64 cassette £11.22 & diskette £15.28 • No other versions planned



• Righty-ho. Quiz time. Which gem do you touch to make the screen on the left begin to resemble the screen on the right?

• So you thought that was easy. Wait until you tackle the later levels such as this one. You stand a better chance of turning a lump of coal into a diamond within the same time scale.

What an odd title. And what odd prices. Thanks, Norman. And thank you Demonware, for *Gem'X* is considerably more entertaining than 17.5 per cent VAT. My name's Penn Elton, good night.

Gem'X is, loosely speaking, what seems to be generally described as an arcade puzzler – a sort of thinking man's arcade game really. However, it doesn't fall into the same category as that classic Soviet invention *Tetris* which is more concerned with hand-eye co-ordination than solving any form of puzzle. Come to think of it, *Tetris* isn't actually that far removed from *Space Invaders*.

Anyway, back to the game in question. *Gem'X* is all about arrangements of gems. The idea is simply to rearrange a collection of gems presented on the left-hand side of the screen so that it matches the arrangement on the right. The catch, of course, is the way in which this has to be achieved.

The gems are like the Royal Family in that they have a hierarchical structure. Unlike the Queen and her kin however, a gem's importance is determined by its colour. At the top of the tree is Red, followed by Green then Blue then Purple and finally Yellow.

When you touch a gem in a special way (via a hand-shaped pointer, actually) it's demoted two colours down the scale – so a red gem would turn blue. There's more; any gems horizontally and vertically adjacent to the molested gem are also demoted, but by one colour. So what happens to purple and yellow gems when they are touched you may ask? They disappear and the force of gravity plays its part.

• With a selection of completed levels under your belt you get to see a 'map' and determine your route to success. And you don't have to play from scratch every time – passwords are given on completion of a selection of screens.

There are over 400 such screens in *Gem'X*. And that's about the size of it, so to speak. However, to add a bit of spice there is a liberal sprinkling of titillating imagery and saucy sampled speech from a hostess of Japanese cum European persuasion called Kiki. And it goes further. Rewards in Gem'X come in the form of crude pictures of naked gals – that's to say, the pictures are crudely drawn.

There's nothing too tasteless, really. Even Kiki's speech is tame. She does little more than gasp and sniff occasionally, apart from when she's proclaiming, "I love you!" when you start and, "Good luck!" before every level. She also cries "You made it!" and "Oh no!" on the odd occasion.

It's a bit of a bugger trying to get your head around the concept of *Gem'X* at first, especially with the time limit running out all too often. Once you get into the swing of things, though, it becomes difficult to leave game alone. And with all those naked girls *Gem'X* is guaranteed to break the ice at parties.

PLAYING TIPS

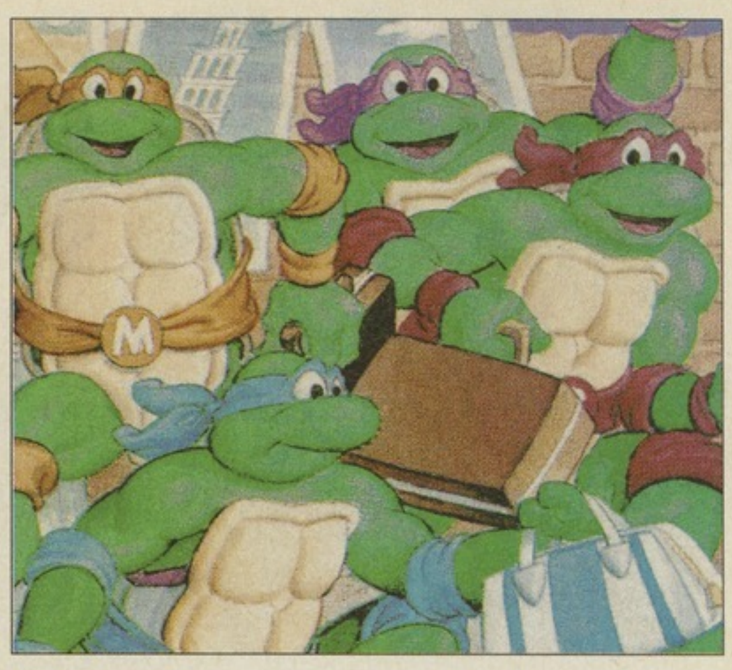
PANG
Ocean

COMMODORE 64 Please note that you need a two-button joystick to make this work. Begin play but don't score any points whatsoever. When the timer reaches one minutes and 20 seconds, press the second firebutton to pause the action. Now press the 'N' key to advance a level before pressing the second firebutton again to 'unpause'.
SPECTRUM Begin play but don't score any points. When the timer reaches one minute and 20 seconds, pause the action then 'unpause' to advance a level.

Instead shaven-headed heroine Ripley (played by Sigourney Weaver) supposedly uses an axe to fend off the aliens' advances. It's also rumoured that there are a few extra alien types this time around, including a giant "space cow". The film should be out before the end of the year

● Ocean's home computer incarnations of ***Terminator II: Judgement Day*** are in the hands of Dimentia, the team responsible (in parts) for Core Design's ***Corporation*** and more recently the Amiga and Atari ST conversions of ***Golden Axe*** for Virgin. The film, once again starring Arnold Schwarzenegger under the direction of James Cameron, is due to open later this year.

● One licence Mirrorsoft has not obtained is the sequel to one of last year's biggest-grossing flicks, ***Teenage Mutant Ninja Turtles***. Instead of bringing ***Teenage Mutant Ninja Turtles II: The Secret Of The Ooze*** to your screens, Mirrorsoft is producing conversions of the Konami coin-operated incarnation of the original film. The storyline in Konami's scrolling beat-'em-up sees the Turtles' and their chums in all sorts of sticky trouble. First their favourite reporter April O'Neal has to be rescued from a burning building, then there is a battle with the deadly duo BeBop and Rocksteady and on top of all that Splinter gets kidnapped by the evil Shredder. Probe is handling the task of converting ***Turtles*** to the Amiga, in time for a proposed Christmas release.



● The man with the hat is back again, only this time he's not coming to the silver screen. Indiana Jones' latest adventure, entitled ***Indiana Jones And The Fate Of Atlantis***, has been written by video games enthusiast Steven Spielberg and will be appearing in comic-book and computer form only, the latter interpretation care of US Gold. As was the case with ***Indiana Jones And The Last Crusade***, US Gold will be releasing releasing two different versions – one adventure and the other action. Lucasfilm Games is producing the adventure, with Attention To Detail, the team behind ***Night Shift*** for US Gold, handling the arcade incarnation. ■

PLAYING TIPS

FORGOTTEN WORLDS
US Gold

AMIGA When the title sequence appears type ARC then press the 'HELP' key. Play will now begin so get ready to press the 'S' key to access the shop (note that this only works once per level) or the 'N' key to skip to the next level. Both players will be invulnerable too.

PLAYING TIPS

DRAGON BREED
Activision • Amiga & Atari ST

AMIGA During play, pause the action and type IREM. Now you can resume play with invincibility (mind you, avoiding gaps is still a good idea). For some strange reason this doesn't always work first time, so repeat until it does.
ATARI ST When you reach the lair of the first Boss and the big beggar is loaded from the disk, hold down BOTH mouse buttons. When the beast has loaded pressing the 'HELP' and 'UNDO' keys (the screen should flash) activate infinite lives and disable collision detection.

TRAINSPOTTERS GUIDE TO SOFTWARE COMPANIES

THE FIRST IN A SERIES OF RUN DOWNS OF THE PEOPLE AND COMPANIES RESPONSIBLE FOR THE GAMES YOU PLAY. THIS WEEK: ARC DEVELOPMENTS

From the humble beginnings of one of its founders' bedrooms, Arc Developments has grown into 1,400 plush square feet of office. Arc Developments was formed in January 1989 by Byron Nillson, Richard Underhill, Chris Coupe and Paul Walker because they were, "disillusioned with working for a publisher so we thought we'd go it alone."

Over two years later and with five successful conversions under its belt, the company now numbers 11 strong.

ARC SOFTOGRAPHY

1989: *Forgotten Worlds* (US Gold) Spectrum, Amstrad, Commodore 64, Amiga, Atari ST, IBM PC & compatibles

1990: *Crack Down* (US Gold) Spectrum, Amstrad, Commodore 64, Amiga, Atari ST
X-Out (Rainbow Arts) Spectrum, Amstrad
Dragon Breed (Activision) Atari ST, Amiga
Pang (Ocean) Commodore 64 Cartridge, Amstrad Cartridge, Spectrum

1991: *Onslaught* (Hewson) IBM PC & compatibles, *Predator 2: The Hunt Continues* (Mirrorsoft) Spectrum, Amstrad, Atari ST, Amiga

TO COME...

Armalyte (Thalamus) Atari ST, Amiga
Restrictor (Thalamus) Atari ST, Amiga
Robozone (Mirrorsoft) Spectrum, Commodore 64, Amstrad, Atari ST, Amiga, IBM PC & compatibles
R-Type II (Activision) Atari ST, Amiga
The Simpsons (Ocean) Spectrum, Commodore 64, Amstrad, Atari ST, Amiga, IBM PC & compatibles
Seven Titles To Be Announced

THE DIRECTORS

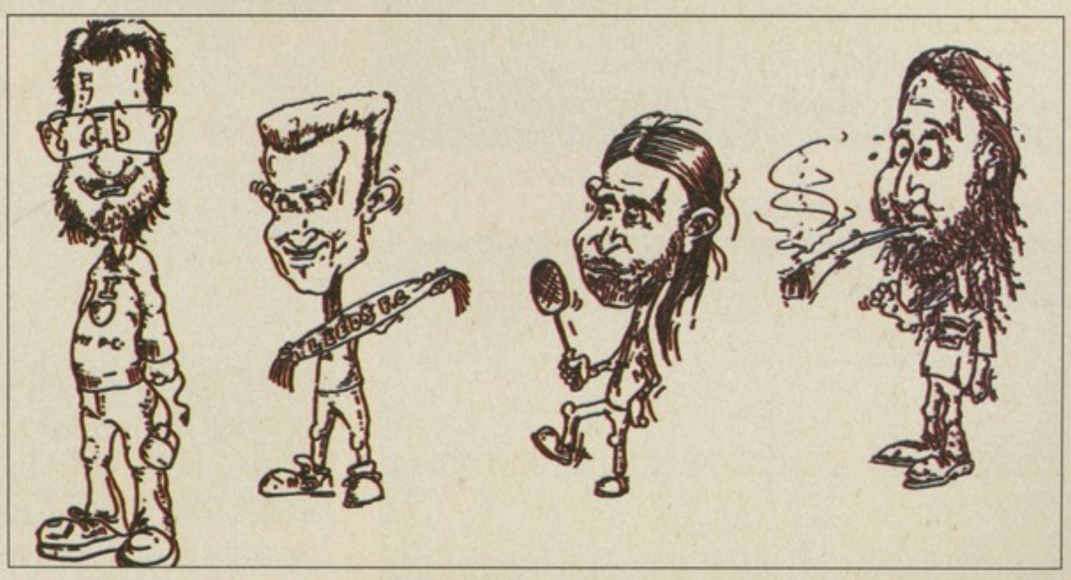
PAUL WALKER (Artist)
Before Arc, Paul's portfolio included an array of graphics for Elite, including the Atari ST and Amiga versions of *Thundercats*. Since then he has produced pixels for *Forgotten Worlds*, *Crack Down*, *X-Out*, and some of *Dragon Breed*. His recent work includes *The Simpsons*, *Predator 2*, *Robozone*, *Restrictor* and pieces of *Armalyte* and *R-Type II*.

BYRON NILLSON (Programmer)
Byron's claim to shame is that he converted David Crane's *Little Computer People* to the Spectrum. Since Arc was formed he's written *Forgotten Worlds* and *X-Out* on the Spectrum and Amstrad, along with the Spectrum version of *Pang*. Byron's most recent work includes the Spectrum and Amstrad versions of *Robozone* and *The Simpsons*.

CHRIS COUPE (Director, Programmer)
Before Arc, Chris programmed *Cataball* on the Commodore 64 for Elite. Since then he's written the Amiga conversions of *Forgotten Worlds* and *Crack Down* (though apparently the latter was from Tim's original Atari ST code), along with *Robozone* on the Atari ST and Amiga. Chris is now busy converting *The Simpsons* to the Amiga.

RICHARD UNDERHILL (Programmer)
Richard's portfolio includes the unreleased Commodore 64 arcade adventure *Pentacle* for Gremlin and some Commodore 64 work for Elite, such as *Overlander*. Richard's since written *Forgotten Worlds* and *Pang* on the Commodore 64 and the Spectrum and Amstrad incarnations of *Crack Down*. He's currently putting the finishing touches to *Restrictor* on the Amiga and Atari ST before getting down to some serious business on the Commodore 64 version of *The Simpsons*.

Also on the staff are:
Tim Round (Programmer), Stuart Middleton (Programmer), Julian Scott (Programmer), Derrick Owens, (Programmer), Paul Michalak (Artist), Jon Harrison (Artist).



• Behold the directors of Arc the company responsible for such games as Pang and Onslaught. *From left to right Byron Nillson, Richard Underhill Chris Coupe and Paul Walker.*

LEARNER DRIVERS

Fancy an alternative to the business management seminar? Tim Smith looks at seven pieces of software which turn your PC into an interactive learning centre.

Computer-Reinforced Education is the name of a suite of programs aimed at the PC user in the business world. The seven packs we are reviewing here deal with topics as diverse as *How to master bookkeeping* through to *How to deal with other people* via *An introduction to banking and money*.

Essentially, the format of each unit is the same regardless of subject matter. What you get inside your smart blue box are two 5.25-inch disks, a single 720K 3.5-inch disk, a quick start guide and a warranty which to quote: "... insures your Ivy product against spilt coffee, children with scissors and hot sun on car seats ... ". The look of the whole package is confidence inspiring and professional. With all of these basics comes a manual, or 'reference text' as it is called, supplied to be used along with the on-screen activity.

So, with *How To Master BookKeeping Part 1,* the manual deals with the details of concepts such as 'Prudence' (this states that profits should not be anticipated, but should only be recognised when realised), Double Entry accounting, and the bought-day book. There are case studies which are used later in the computer element of the system. Most importantly for anyone new to the matter in hand, diagrams and chapter summaries are also included.

Each package is credited to a qualified author; bookkeeping to Henry Lunt B.Com, FCA; *Fundamentals of Marketing* is to Harbridge Consulting Group, thus specialist attention has been paid to each subject.

The look of the whole package is confidence inspiring and professional

The computer-related section of the program is graphically a hit and miss affair. The graphics, when they are used, bear resemblance to LS Lowry with a Spectrum. This is only really apparent when the normal run of primary coloured windows which flash up to present a point, is interrupted by representations of men. Sound isn't a matter for consideration, there isn't any.

Each of the packs comes with a 'pre-test' of multiple choice questions. If you have read the reference text before embarking on the interactivity then this is normally a breeze. Once you've completed this, and written down your score, you are taken through a number of 'Chapters' which once again draw on the reference material and tend to repeat the pre-test questions. Finally there is a test, which is in effect the pre-test once again. Screen dumping of information is achievable via the SHIFT+PRT SCRN key combination.

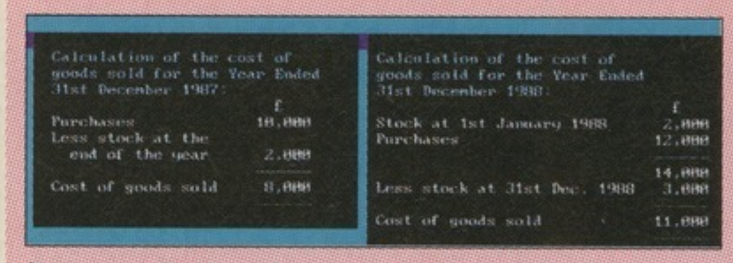
Talking of keypresses, that's your interactive. If you have a mouse forget about it, you won't need it. Aside from entering answers to the multiple choice questions, movement through the modules is achieved via the space bar, and END or ENTER keys. It would certainly be an advantage to build-in mouse compatibilty, and maybe even some 'hot spots' on screen.

Generally, all of the packages achieve their aims - to present bite-sized chunks of information in a clear style. Everything is professionally presented - save for those stick-people - and deals with its subject matter in a mature manner. The PC is kept as user friendly as possible, even if the 386 we used was under-used in terms of processing power, sound and graphics. ■

Each packages costs £35 from Ivy Educational Software at 99-103 Lomond Grove, London SE5 7HN. Tel: 071-252 7042.

COMPUTER RE-INFORCED EDUCATION – THE SEVEN SOFTWARE PACKS ON HAND

HOW TO MASTER BOOKKEEPING (PART1)



It appears that bookkeeping is an in-depth subject working on the fact that this is the first part of a three part series. Once again diagrams and clear prose is the order of the day. On screen the program is fairly drab with windows shooting at you left right and centre.

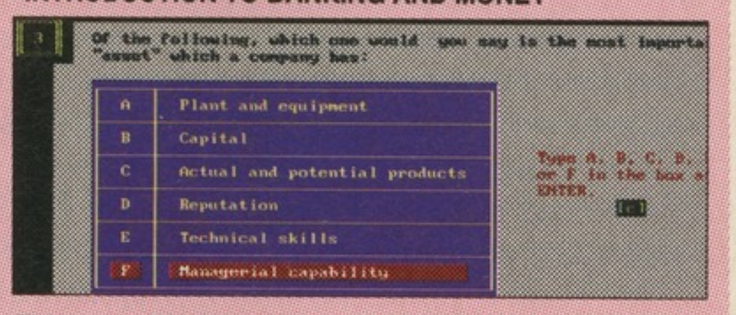
ANALYSING FINANCIAL STATEMENTS

This module makes use of a case study which deals with the Southern Toy Company Ltd, a ficticious organisation which takes the advice of a management consultant and changes its tried and tested facilities. You follow this on both disk and manual. A useful in no specific subject area, but rather takes a pseudo psychological look at human relations. It is obviously meant for managers and makes use of some wonderful jargonese such as natural child states, laws of interpersonal communication, and stroking analysis. Outside of a management training seminar it is slightly whimsical in approach and aims.

THE FUNDAMENTALS OF MARKETING

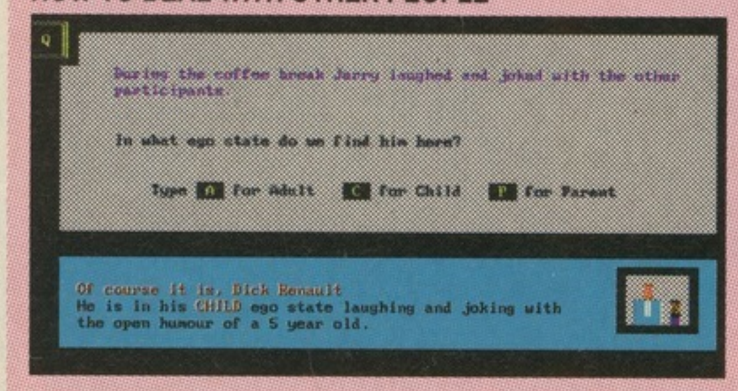
Marketing is a jargon-filled sphere in business life and this program does not attempt to avoid it. The case in point here is fascinating for computer buffs as it deals with the long-dead Isenstein computer company and its Odessa PCW portable. It also looks at Amstrad and Sinclair. A specialist subject, this package may be useful if you are thinking of setting up your own

INTRODUCTION TO BANKING AND MONEY



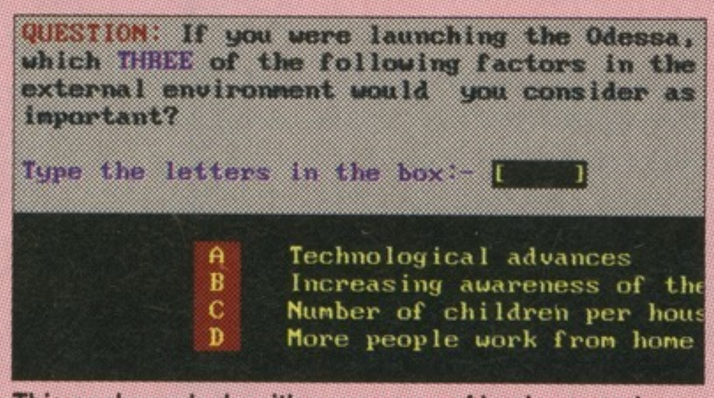
This one relies far more on the computer element than it does the reference text. Here we see the use of stick-man graphics which takes you through the evolution of the European financial system. The feel of the whole thing is of a comprehensive school economics class. It may well be of use as a beginner's course for students but as a business system it is rather too simple.

HOW TO DEAL WITH OTHER PEOPLE



The wackiest of the bunch. By this we mean that it deals

HOW TO DEVELOP A COMPETITIVE BUSINESS STRATEGY



This package deals with a grey area of business and succeeds in clawing a few decent guidelines. Once again it is pitched firmly at the management strata. Questions are set and answered and the user is taken through with diagrams and summaries. The tests are once again simple if you have paid attention to the reference text - this in itself must suggest that learning is actually achieved.

UNDERSTANDING THE PROFIT AND LOSS ACCOUNT AND THE BALANCE SHEET

Good down-to-earth information presented in a clear style. This package takes you through aspects such as Accounting Entities, Shareholders funds, and Operating Profits among a heap of other highly relevant data. There are plenty of clear diagrams rather than blocks of text. One rather doubtful element is that no author is credited here.

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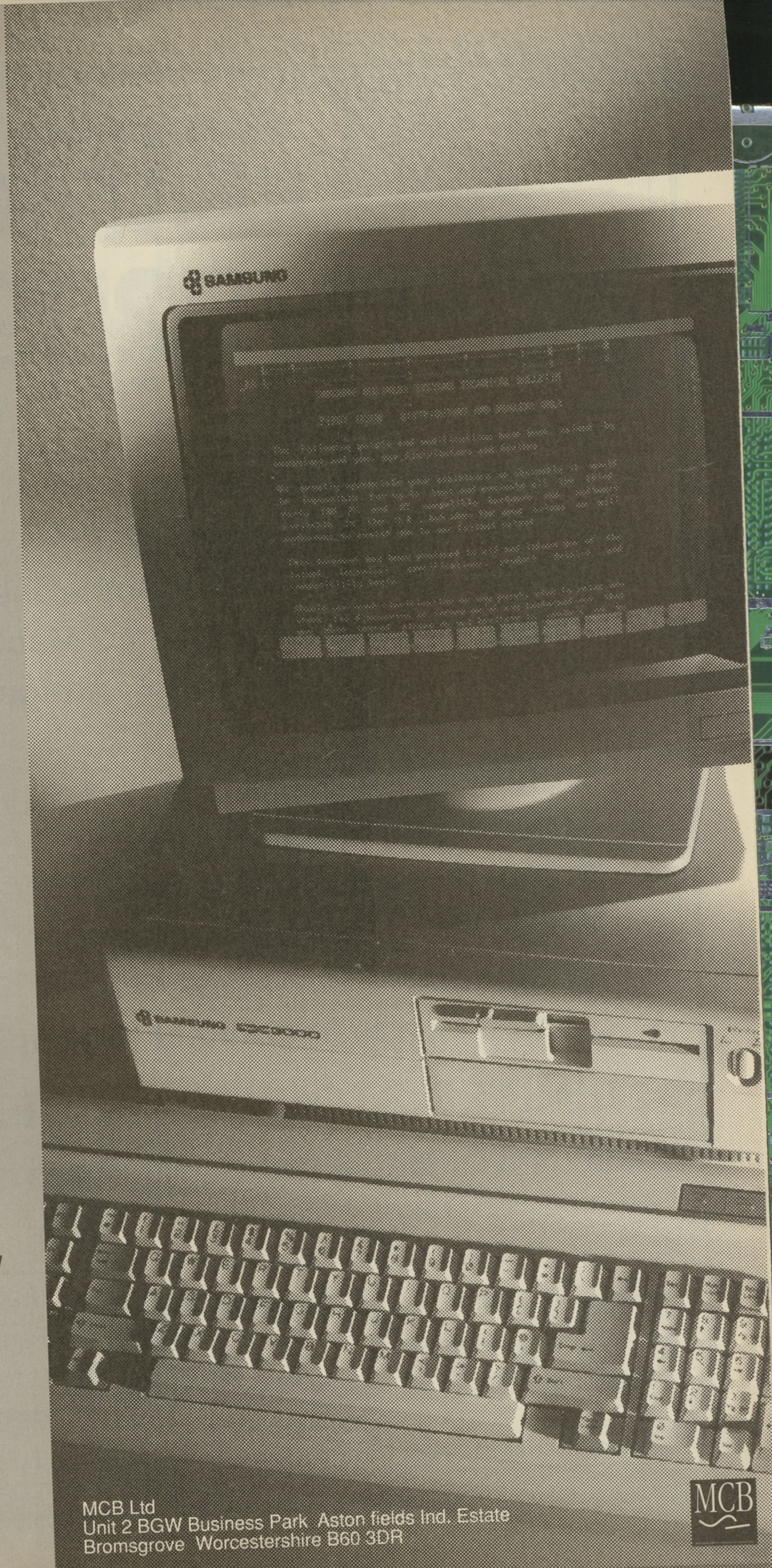

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KING OF THE WIMPS

The graphic user interface or GUI is now the rule rather than the exception it once was. Neil Davey offers a personal view of the strengths and weaknesses of today's desktops.

When I first started using computers dinosaurs ruled the Earth, at least the things I was computing on were dinosaurs. Huge cabinets with whirring tape drives and hard disks that looked like a cross between a fridge and a juke box. As well as looking like a dinosaur, they talked like cavemen, short commands typed into a command line interface which only a few people were privy to, a private language. Working with these computers was like sucking porridge through a straw, and about as much fun.

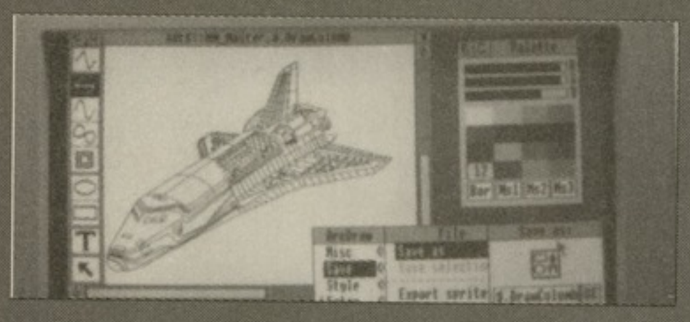
It's a wonder that any computing got done at all in those days, as you had to type everything onto cards before you could add anything to the machine, and programs were written on to punched paper tape. Using a computer was something the man on the street wouldn't even think about, due to the amount of things you had to know before you could do it.

AT THE FRONT END

Then at Xerox Palo Alto they created something they called a Graphic User Interface or GUI, something which they thought may or may not see the light of day. These were called Front Ends, as they were a graphical interface over the top of the operating system, which enabled the user to control all the functions of the system without any laborious typing. Using a little puck or mouse, the user moved a pointer or arrow around the screen, and clicked on icons or pictures representing the programs on the computer's disk. This was called a Windows Icons Mouse and Pointers interface, or a WIMP, and this style of interface is the predominant method of accessing computers in the 90s. So much for never seeing the light of day.

Firstly Apple Computers adapted the idea and used it, first in the Lisa and then later and more successfully in the Apple Macintosh. The Mac has gone from being a quirky cult machine to being something of an industry standard, if the industry you're talking about is publishing. The Apple WIMP really caught on, so it seemed only natural that when the new 16-bit computers were being designed that they too should feature a WIMP of some kind. Some of the first efforts were on the PC and Atari ST, which for a time shared Digital Research's GEM system. The PC added it on disk, whereas the ST had GEM as part of its code on the chips. Following the success of the ST, Commodore decided on a WIMP interface for the new Amiga, and sure enough when the Amiga came out it had a GUI called Workbench.

ARCHIMEDES (DESKTOP)

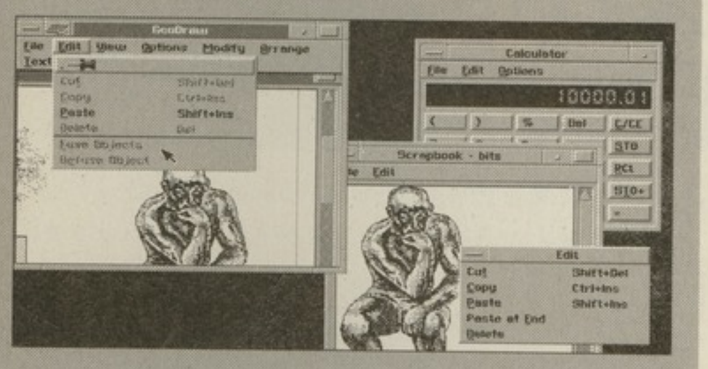


The Arc is a fabulous machine, although its singular lack of success in the same fields as its nearest competitor the Amiga is almost certainly down to its lack of software support. The GUI on the Arc is called simply Desktop and it is a very fast multi-tasking environment. Fast is too small a word for it perhaps. Everything on the Arc is fast, and that is down to the ARM 3 RISC (Restricted Instruction Set Chip) processor which cuts down instructions for extra speed.

Its tremendous speed allows scalable fonts to be drawn to the screen in real time and that is very fast, considering the amount of calculations going into it. The one thing about the Arc is that the on screen fonts are stunning and this is achieved by skilful anti-aliasing. A pixel of mid grey is placed in all the jaggies on the curves of a letter, making it much smoother to look at and matching the kind of output you can get on the printer. Desktop is the fastest GUI around and one of the most friendly. But the lack of a really good range of multi-tasking software is holding it back.

EASE OF USE	9/10
SPEED	10/10
DESIGN	8/10
DEGREE OF MULTI-TASKING	7/10
CUSTOMISING	7/10
OVERALL	41/50

PC (ENSEMBLE)

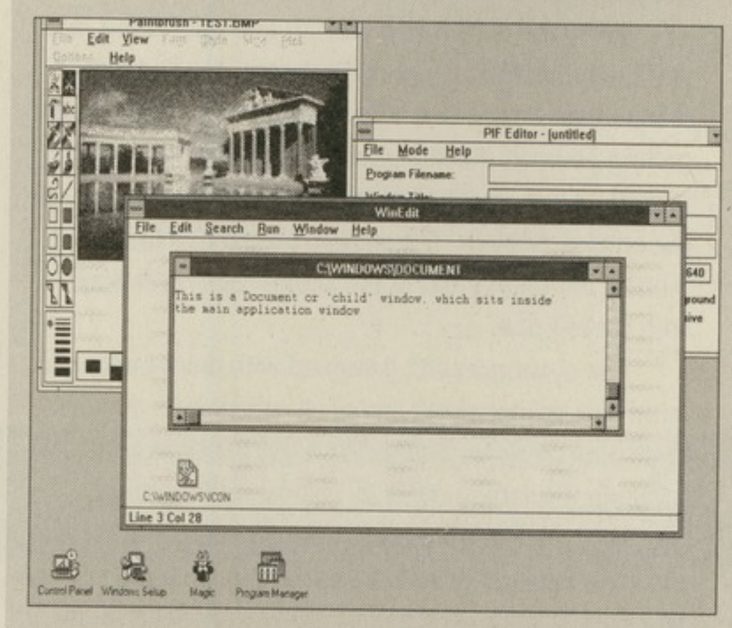


This is a new low end GUI for any flavour of PC written by the team which brought the GEOS GUI to the C64. This was one of the best selling programs on the C64 and it was a very flexible and usable system, considering what it was running on and how little you had in the way of memory to support it. Although not in wide use as yet, this looks like it might carve a little niche for itself at the bottom end of the scale.

Although not much software exists for this GUI yet, Geoworks has started you off with a suite of extremely well written programs that come with it. *Geowrite*, *GeoDraw* and *GeoPlanner* come free with the Ensemble package, and very slick they are too. The Apple Mac did this to begin with and survived a long time after the freebie packages went. A strong start, but it remains to be seen if anyone picks up the ball.

EASE OF USE	9/10
SPEED	8/10
DESIGN	8/10
DEGREE OF MULTI-TASKING	7/10
CUSTOMISING	6/10
OVERALL	38/50

PC (WINDOWS 3)



Version 3 of Windows caused such a stir when it came out, that most of the people I know who usually asked me if I'd seen such and such a game asked "Have you tried Windows 3 yet?" It has that effect on people. Once you've used it, you can't live without it. MicroSoft sold 1.3 million copies of it in just seven months, and this must make it one of the best selling GUIs of all time. I think the only people it doesn't affect quite so strongly are those used to Mac or Amiga GUIs.

Windows can multi-task, after a fashion at least, and it is fast. But, this is mostly due to the fact it only runs on 286 and 386 machines. You can customise the interface, with backdrop pictures being the favourite racing stripe. These are pictures which replace the standard backdrop against which all the icons sit.

Windows is very simple to use, and very stable too. It doesn't go wrong very often, even if you try to trip it up. The only real drawback to Windows, and it shares this with GEM, is that it isn't quite as free and easy with the placement of icons. Instead of being like a real desktop where you can shuffle stuff around wherever you like, it tends to be a bit like an inflexible graphic representation of directories and files.

EASE OF USE	7/10
SPEED	8/10
DESIGN	9/10
DEGREE OF MULTI-TASKING	5/10
CUSTOMISING	6/10
OVERALL	35/50

GRAPHIC USER INTERFACES

THE BEST OF THE BUNCH

But the PC needed a reliable WIMP interface in answer to all these best selling WIMPs, and so PC standards maker MicroSoft was charged with the task of producing an industrial strength GUI that would be stable, easy to use and most of all an industry standard. It delivered that with Windows.

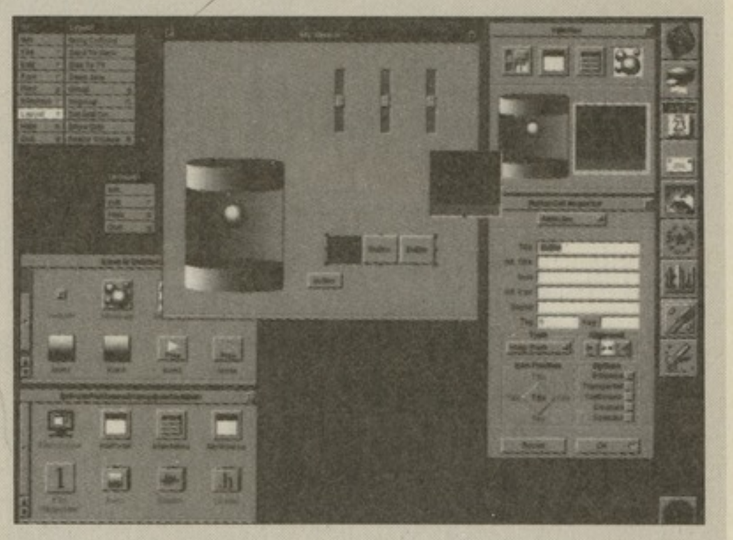
Although UNIX has been around for some time (in fact about the same time as the C language since that is what UNIX was written in) it lacked a GUI until comparatively recently. X Windows is the industry standard, and it is available on anything from a DEC VAX, through UNIX PCs all the way to the Amiga 2000UX and 3500UX machines.

WHICH IS THE BEST?

It seems that today everyone needs a GUI for their computer, and they've got them. But which of them is the best? In choosing our King Of The WIMPs, we had to decide on some categories to classify them, and so we have ease of use, speed, design, degree of multi-tasking and customising. The last one is the degree to which you can make the WIMP your own by altering the default settings.

There are more and GUIs appearing every day, with each claiming to be the best. Sooner or later some will fall by the wayside, and I'd put my money on the Mac, Amiga and UNIX with X Windows systems as being the fittest to survive. ■

NeXT (UNIX)



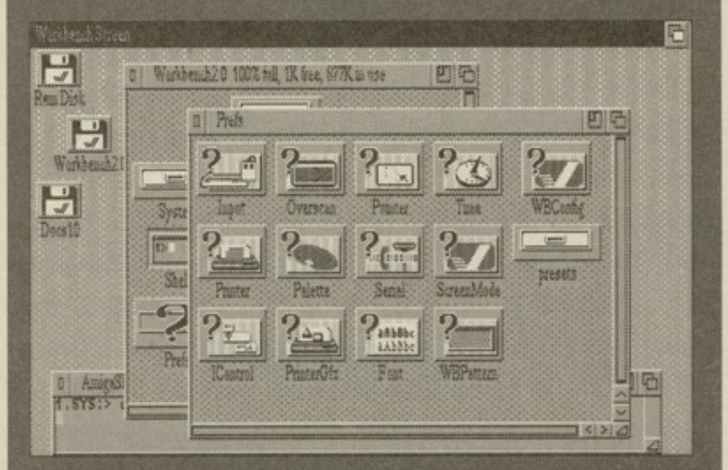
The UNIX environment supports a wide variety of standards, although at least in the UNIX forum some effort is being made to standardise. But with so many manufacturers involved it's likely that some differences will creep in. The main differences are between the GUIs that systems use. Commodore has plumped for System V and X Windows on its Amiga UX series, as does Sun Systems. UNIX GUIs will always have some degree of multi-tasking, as UNIX was designed from the start as a multi-tasking OS, although there are precious little programs that take full advantage of X Windows as yet. Most of the ones that do exist are just common PC programs ported across to the UNIX environment.

Steve Jobs' NeXT uses a GUI called Workspace Manager, incorporating a thing called Display PostScript which basically interprets Adobe's PostScript and prints it to the screen. Very flash, very fast, but very expensive and about as portable as a pigmy hippo. Being Steve Jobs' baby of course, the GUI, scored below, has much in common with the Mac, and this reflects the fact that most of the design team were ex-Apple techies.

And finally Acorn has its own UNIX baby in the shape of the R140, which uses X.Desktop written by IXI. This was rumoured to be the GUI for the NeXT machines, but was pipped at the post by Workspace. X.Desktop interfaces with RISCOS in the same way as Desktop on a normal Arc. It provides a front end to the system, but still uses the same DOS style file trees etc, meaning it is more of a graphical representation of the normal file structure rather than the more freeform methods used on the Mac and Amiga.

EASE OF USE	**9/10**
SPEED	**10/10**
DESIGN	**10/10**
DEGREE OF MULTI-TASKING	**10/10**
CUSTOMISING	**8/10**
OVERALL	**47/50**

AMIGA (WORKBENCH)



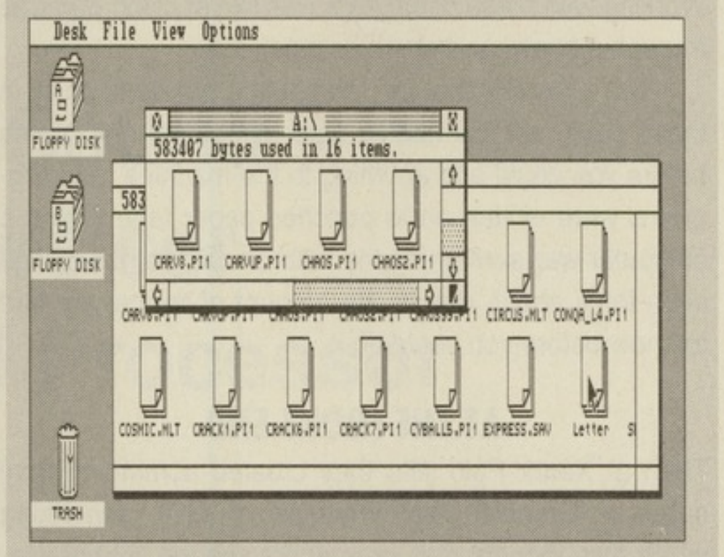
The Workbench was programmed by Commodore to be as little like the Mac interface as possible, and yet have the same level of usability. Commodore has recently backtracked and put back a lot of features to make it more Mac-like with Workbench 2.0.

The system works on a two button mouse, one for selecting and clicking, and the other one for revealing menus. Workbench is one of the very few front ends for a small computer that was intended to be multi-tasking from the very start. It's very rare that programs take over the machine completely, and so all programs you buy will happily multi-task with others, provided of course you have enough memory. Workbench has its faults, but it is very keen to be customised. The colours of the Workbench can be altered and so the icons with very little problem, something which is a real pain in the bum on most other GUIs.

Workbench 2.0 has a lot in common with the Mac's Desktop, with the ability to drag a box around a group of icons to select them all, and a new drawer menu item, saving you having to copy the empty drawer all the time.

EASE OF USE	**9/10**
SPEED	**6/10**
DESIGN	**7/10**
DEGREE OF MULTI-TASKING	**10/10**
CUSTOMISING	**10/10**
OVERALL	**42/50**

ST (GEM)



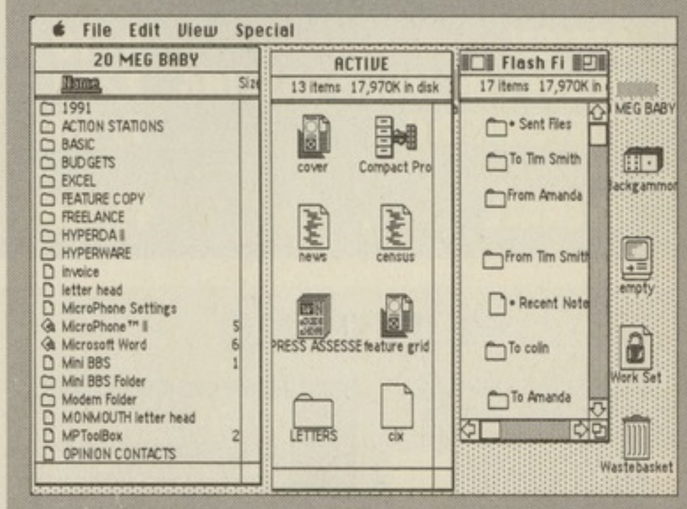
By far the ugliest of the WIMPs. It's slow, has garish colours which you can't alter and on the ST it is quite hard to use. Most of this is down to the standard ST mouse, which is very spongy. But this can be fixed by using a replacement like the Naksha.

Using the menus is a very hit and miss affair, as you just push the mouse up to the top bar and the menus plop down. This often happens by accident and getting yourself disentangled from the menu you've picked up can waste a few seconds and distract you at the crucial moment. The system uses a two button mouse, although most of the actual clicking is done with the left one.

The system wasn't designed with multi-tasking in mind and so there isn't any at all, which cuts down any chance of doing anything else while the computer is printing, formatting disks or checking directories. Basically the design is a washout and is an example of old style thinking which has somehow survived into the 90s.

EASE OF USE	**4/10**
SPEED	**5/10**
DESIGN	**4/10**
DEGREE OF MULTI-TASKING	**0/10**
CUSTOMISING	**0/10**
OVERALL	**13/50**

MACINTOSH(SYSTEM)



The first really popular GUI and in fact still one of the most clued up. System 7 has just been released and it makes the first major improvements to the system since it was introduced in 1983-84. The strength of the Mac system is that like the Amiga's Intuition routines, a lot of the drawing of windows and stuff has been programmed into the system with special fast.

System 7, not unlike the Amiga's Workbench 2.0, looks 3D, with all the little on-screen buttons and windows drawn in colour and in bas relief. This doesn't show up on mono systems, but than again if you have a mono system you don't get many of the benefits of recent systems. Multi-tasking is OK, as most Macs are multi-tasking anyway, it's just that the software hasn't been written to support it. MIDI manager, for example, is a recent addition which enables you to play MIDI tunes and work on another program at the same time. Why you would want to is dubious, but you can do it.

It's still as hard to customise a Mac system as it ever was, usually having to resort to dodgy (and highly crashy) system level PD utilities to do so.

EASE OF USE	**10/10**
SPEED	**9/10**
DESIGN	**9/10**
DEGREE OF MULTI-TASKING	**4/10**
CUSTOMISING	**3/10**
OVERALL	**35/50**

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INTERFACES

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The monitor/display connector is the normal 9-pin D connector and allows the display to be echoed to a standard colour monitor. The LCD screen has a 1.4 aspect ratio and has a display characteristic of 200x640 pixels in graphics mode and 25 lines of 80 characters in text mode.The LCD screen is of standard reflective type.

The operating system that comes with the Equity LT is MS/DOS 3.3. This is still preferred by many who haven't come to terms with the later 4.01 version. With a hard disk drive of only 20Mb, the later version isn't needed for disk management as the internal hard disk doesn't exceed the 32Mb storage limit set by this earlier version of the operating system.

The Epson Equity LT hard drive in this competition came from UK Home Computers on 0793 695034 so if you don't win, a mere £500 or so will get you one anyway.

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c) Stowe
d) Roedean

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b) Barrat Homes
c) Persil PLC
d) Holiday Home for Pets Pie Company

3) What does LCD stand for
a) Lambada creases dancers
b) Liverpool City Docks
c) Lovely Cuddly Dave
d) Liquid Crystal Display

4) Which of these can't you use on a train
a) A laptop computer
b) An electric razor
c) A cellphone
d) A mainframe

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c) The LCD screen
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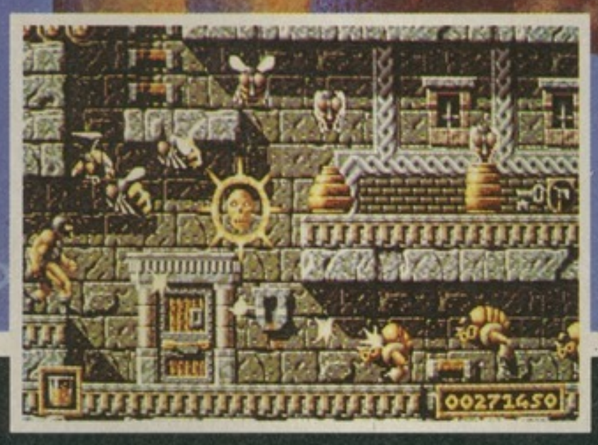

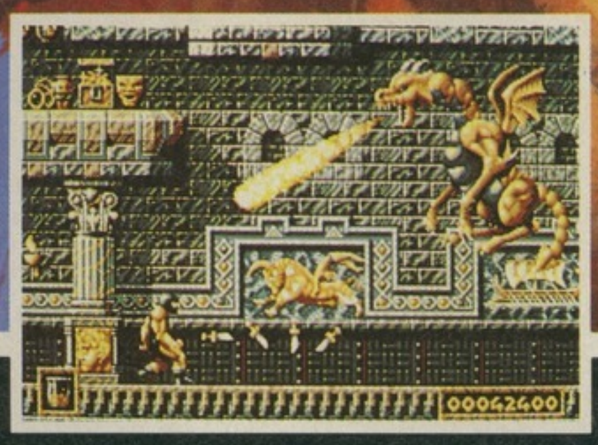

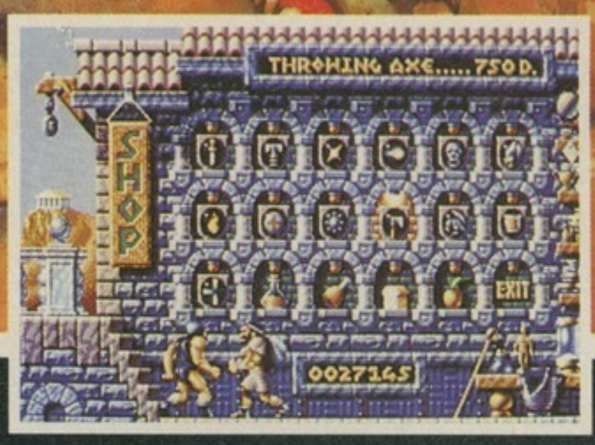

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